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PREDICTORS OF MATERNAL DELAYS FOR INSTITUTIONAL DELIVERY AMONG PARTURIENTS IN GAMO ZONE OF SOUTHERN ETHIOPIA: THE GENERALIZED ESTIMATING EQUATIONS (GEE)

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ABSTRACT

BACKGROUND: Delay in institutional delivery refers to the time interval from the first onset of labour to start receiving the first healthcare. This study aimed to assess the associated factors of the maternal delays for institutional delivery service utilization in Selected Gamo Zone Health Centres, Southern Ethiopia in 2019.

METHODS: A retrospective study was conducted in rural districts of the Gamo zone. A total of 394 postnatal mothers were selected by simple random sampling. The Generalized Estimating Equations (GEE) was used to examine associations between outcome maternal delay time and independent variables.

RESULTS: The age of respondents was distributed at the mean (±standard devaition) is 29±4.609 years (range from 19 to 40 years). Out of the total 391 mothers, 266 (68.03%) were unemployed and 125 (31.97%) were employed. The unemployed mother had Exp(0.5572)=1.75 times higher odds of being maternal delay compared to employed. Similarly, mothers whose poor knowledge on danger signs of pregnancy and childbirth had Exp(0.5216)=1.68 times higher odds of being maternal delay as compared to whose good knowledge. The odds of being the husband decision maker for institutional delivery service utilization (Exp(0.8006)=2.23) times higher odds of being maternal delay compared to jointly.

CONCLUSIONS: The maternal delay time is significantly determined by the mother's occupation, number of children, final decision maker for institutional delivery service utilization, mother's knowledge on danger signs of pregnancy and childbirth and delay time. Therefore, due attention needs to be given to encourage unemployed mothers, promoting couples in involvement in decision making for institutional delivery service utilization, and creating awareness on danger signs of pregnancy and childbirth.

KEYWORDS: Maternal Delays, Generalized Estimating Equations, Institutional Delivery Service Utilization, Parturient

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INTRODUCTION

Delay in institutional delivery refers to the time interval from the first onset of labour to start receiving the first healthcare [1]. Timely referrals and access to appropriate health care had a great impact on reduction to maternal deaths and disabilities. Maternal delay is one of the contributing factors for high maternal mortality in developing countries [2-3]. About 1,000 women die from pregnancy/childbirth related complications around the world every day and more than half a million women die each year; of these, 99% occur in low-resource countries [1, 3-4]. In Ethiopia, Maternal deaths account for 30 percent of all deaths to women age 15 - 49 and the maternal mortality ratio was estimated to 676 maternal deaths per 100,000 live births [5]. Sixty-two percent (62%) of women had ANC visits during pregnancy but only 26% of women gave birth in the health facility [6].

Antenatal care follow-up, residence and education were significantly associated with institutional delivery service utilization [7]. Place of residence, traveling time takes to reach health institution which provides delivery service, husband's attitudes towards institutional delivery, and counseling about where to deliver during ANC visit were found to have significant association with institutional delivery [8]. Limited knowledge about the pregnancy and the advantage of institutional delivery in women, husband involvement, inaccessibility to health services and poor infrastructure of the health system contributed to low utilization of facility delivery [9].

Ethiopia has one of the lowest rates of facility delivery and is promoting birth preparedness among pregnant women through its community health services to increase the rate of institutional delivery and reduce maternal mortality. Institutional delivery was more common among women who were considered well prepared (57%) versus those who were considered not well prepared (19%) [10]. Mothers' knowledge level of obstetric complications and experience of complications during the last birth was the factors associated with higher odds of receiving delivery care from decentralized local facilities [11]. Furthermore, lack of knowledge on danger signs and benefits of maternal health services, lack of decision-making power of women, lack of privacy and perceived costs of maternal health services were the main factors causing the maternal delay [12].

Despite the government's efforts to expand health institutions to promote facility-based child delivery, home delivery and maternal mortality are still widespread problems in Ethiopia and even if the number of studies conducted in the country were identified factors associated with maternal delays for institutional delivery service utilization, there is still information gap as well as minimal evidence on maternal delays for institutional delivery service utilization. Therefore, this study aimed to assess the associated factors of the maternal delays for institutional delivery service utilization in Selected Gamo Zone Health Centres, Southern Ethiopia in 2019.

METHODOLOGY

Study area and design

The study was conducted from March 1, 2019-April 30, 2019 in the Gamo zone which located 450kms from Addis Ababa, Ethiopia. Gamo zone is one of the zones of Southern Ethiopia. There are four primary hospitals and one general hospital, 53 health centers, and 299 health posts. Facility based a retrospective study design was conducted in rural districts of the Gamo zone, Southern Ethiopia.

Population

All postnatal mothers who gave birth at public health facilities of the Gamo zone were source population whereas all postnatal mothers who give birth at public health facilities during the data collection period were the study population. But women who were severely ill during the data collection period and women who utilized maternal waiting home were excluded.

Sample size determination and sampling technique

The calculation of the required sample size for this

study is calculated by using Open-Epi 7.02 with the assumption of 95% confidence level (Zα/2=1.96), 80% power (Zβ=0.84). The magnitude of first, second, and third maternal delays in utilizing institutional delivery service were 37.8% [13], 29.7% [14], and 34.7% % [2] respectively. Considering a 10% non-response rate, the maximum sample size requires for this study was found to be 394 postnatal mothers (for first delay), 352 postnatal mothers (second delay), and 383 postnatal mothers (third delay). Since the sample size calculated for the first delay was greater than the second and third delays, 394 postnatal mothers were involved in the study.

To get the study participants, first, two districts (Dita and Chencha Zuriya districts) were selected randomly from the nine rural districts. All public health centers in the two selected districts were included and the sample size was proportionally allocated to all public health centers based on their monthly delivery load. Then, by using a simple random sampling method study participants were selected and interviewed in each health center.

Study variables

The response variable considered for this study was the maternal delay. It was measured at three time points. First maternal delay: was the time interval between recognition of the labor and make decision to seek institutional delivery service. Time is taken ≥1 hr to make decision to seek care was considered as delay and < 1 hr considered no delay. Second maternal delay: was time interval from starting to reach health facilities after decision has made. Time is taken ≥1 hr to reach the facility considered as delay and < 1 hr considered no delay. Third maternal delay: was the time interval between reaching the facility and the delivery care service received. Time is taken ≥1 hr to receive delivery service considered as delay and < 1 hr considered no delay. So, the maternal delay was recorded at three time points.

The covariate variables are assumed to influence the maternal delays of the mother included in the model are maternal age, educational status of the mother, husband's education status, occupation of mother, occupation of husband, household monthly income, maternal religion, maternal residence, women decision-making power, ANC follow-up, ANC frequency, number of children, previous pregnancy related problem, birth preparedness, consultation, mother's knowledge on danger signs of pregnancy and childbirth, and delay time.

Data collection procedures

The data were collected by using face-to-face interviewer administered and pre-tested structured questionnaires. The questionnaire was partly adapted from the survey tools developed by JHPIEGO maternal and neonatal health program [15]. Initially, it was prepared in English. It was translated to the local language (Gammotho). The questionnaire was pre-tested on 20 respondents (5% of sample size) in Chencha primary hospital which was one of unselected health facilities to ensure clarity, wordings, logical sequence and skip patterns of the questions. Based on the pretest, the time needed to complete an interview and the total number of days needed for data collection was estimated. An appropriate training for data collectors and supervisors that include a briefing on the data collection process of the study, discussing the contents of the questionnaire were carried out.

Data processing and analysis

The statistical software used in this study was the SAS version 9.4.

Generalized Estimating Equations (GEE)

The binary outcome variable maternal delay contains measured at visits 1, 2, and 3. Since measurements are taken from the same subject over time, observations cannot be considered as independent. For binary response, a linear mixed model was difficult to be fitted with the maternal delay as random effect, since the maternal was delayed (Y_ij=1) or not delayed (Y_ij=0). In this study, a GEE logistic regression model used for analyzing binary data because GEE models were useful for situations when the data are correlated [16]. GEEs were developed as a means of analyzing longitudinal data when correlation is present [17, 18]. This method requires only the correct specification of working assumptions

about the correlations structure. One may assume independence, compound symmetry, unstructured and user defined correlation structure for modelling the correlation structure [19]. The comparison of empirical and model based standard errors for the parameter estimates obtained was performed based on the working correlation assumptions [20].

Suppose that Y_{ij} is a binary response, taking values of 0 (failure) and 1 (success), and it is of interest to relate changes in $E(Y_{ij})=Pr(Y_{ij}=1)$ to the covariates. Then a marginal model for the probability of success is related to the covariates by a logit link function (Fitzmaurice). Letting $Y_{ij}=1$ if the i^{th} mother is classified as delayed at the j^{th} visit, and $Y_{ij}=0$ if the i^{th} mother is not delayed at j^{th} visit, then the marginal probability of delayed at each visit follows the logistic model:

$$\log\left(\frac{\Pr(Y_{ij}=1)}{\Pr(Y_{ij}=0)}\right)$$

$=\beta_0+\beta_1$*religion$+\beta_2$*mother's_occ.$+\beta_3$ *residence $+\beta_4$*Mother's_educ.+ β_5*previous_pregnancy + β_6*ANC_follow_up + β_7*number of children + β_8* decision_maker $+\beta_9$*birth_preparedness + β_{10}*mother's_ knowledge$+\beta_{11}$*delay time

where i=1,…,391; j=1,2,3

Ethical considerations

Before the study conducted ethical clearance obtained from Arba Minch University, College of Medicine and Health Sciences institutional review board with the reference number of CMHS/12033814/111. Written informed consent was obtained from study participants for those aged 18 and above. For those participants, less than 18 years of age written informed consent was obtained from a parent or guardian using standard disclosure procedures. The confidentiality and privacy of participants were actively protected.

RESULTS

Exploratory Data Analysis

In this study, a total of 391 mothers were included and the maternal delay was measured 3 times. The mean age of respondents was 29 years (range from 19 to 40 years). Table 1 exhibits some characteristics of respondents; out of the total 391 mothers, 266 (68.03%) were unemployed and 125 (31.97%) were employed. Most of the respondents, 339 (86.70%) were lived in rural and 201 (51.41%) of respondents' mothers were also illiterate. About 60 (15.35%) of the study mothers had previous pregnancy related problem and 331 (84.65%) were not experienced. In addition, 146 (37.34%), 108(27.62%), and 137 (35.04%) respondents were final decision makers for institutional delivery service utilization by husband, jointly and women respectively. Moreover, the majority of the mothers 239 (61.13%) had birth preparedness.

Table 1: Characteristics of study participants in selected rural districts in Gamo zone, 2019 of maternal delay data.

Variable	Category	Frequency (n)	Percentage (%)
Religion	Orthodox	229	58.57
	Protestant	162	41.43
Mother's occupation	Unemployed	266	68.03
	Employed	125	31.97
Husband occupation	Unemployed	248	63.43
	Employed	143	36.57
Residence	Urban	52	13.30
	Rural	339	86.70
Mother's education	Illitrate	201	51.41
	Litrate	190	48.59
Paternal education	Illitrate	226	57.80
	Litrate	165	42.20
Previous Pregnancy Related Problem	Yes	60	15.35
	No	331	84.65
ANC follow-up	Yes	333	85.17
	No	58	14.83
Final Decision Maker for Institutional Delivery Service Utilization	Husband	146	37.34
	Jointly	108	27.62
	Women	137	35.04
Birth Preparedness	Not well-prepared	152	38.87
	Well-prepared	239	61.13
Mother's Knowledge on Danger Signs of pregnancy and childbirth	Poor	182	46.55
	Good	209	53.45

Results of the Generalized Estimating Equations (GEE)

For the data from the maternal delay study, the estimated correlation is relatively modest assuming an exchangeable correlation, the estimated correlation is 0.124. The comparison of empirical and model based standard errors for the parameter estimates obtained was performed based on the working correlation assumptions (appendix, see Table 4). Exchangeability (compound symmetry) working correlation assumption was found to be more plausible, since the two standard errors were close.

Table 2: Tests of fixed effect of study participants in selected rural districts in Gamo zone,Southern Ethiopia, 2019.

	GEE Analysis		
Source	**DF**	**Chi-Square**	**Pr > ChiSq**
Religion	1	0.78	0.3765
Mother's occupation	1	9.15	0.0025
Residence	1	3.41	0.0647
Mother's education	1	2.64	0.104
Previous Pregnancy Related Problem	1	2.63	0.1046
ANC follow-up	1	0.38	0.5367
Number of Children	1	5.5	0.0191
Final Decision Maker	2	15.77	0.0004
Birth Preparedness	1	2.01	0.1566
Mother's Knowledge on Danger Signs.	1	4.47	0.0344
Delay Time	1	22.97	<.0001

Table 2 presents the score statistics for testing the fixed effect. It can be clearly seen that the p-value for covariates mother's occupation, number of children, final decision maker for institutional delivery service utilization, mother's knowledge on danger signs of pregnancy and childbirth and delay time were significant at 5% level of significance. However, variables religion, residence, mother's education, previous pregnancy related problem, ANC follow-up, and birth preparedness had no significant effect on maternal delay.

The parameter estimates, standard errors and p-values for the generalized estimating equations are depicted in Table 3. Based on the regression parameter estimates and empirical standard errors from the GEE with exchangeable correlation, there is the suggestion that the pattern of change in maternal delay differs by the mother's occupation group (Z=3.05, P-value=0.002). The unemployed mother had Exp(0.5572)=1.75 times higher odds of being maternal delay compared to employed. Similarly, mothers whose poor knowledge on danger signs of pregnancy and childbirth had Exp(0.5216)=1.68 times higher odds of being maternal delay as compared to good knowledge on danger signs of pregnancy and childbirth. The variable number of children has a positive, significant coefficient, meaning that between the two populations with different numbers of children, the population with the many numbers of children had a higher expected probability of maternal delay. The odds of being the husband decision maker for institutional delivery service utilization (Exp(0.8006)=2.23) times higher odds of being maternal delay compared to jointly. The negative coefficient for delay time indicates that the probability of maternal delay decreases as delay time increases.

Table 3: Parameter Estimates, St.Error, Wald, and p-value for GEE with an Exchangeable correlation of maternal delay data

Parameter	Variable	Estimate	St.Error	Wald	P-value
Intercept		-1.439	0.3618	-3.98	<.0001
Religion	Orthodox Protestant	0.1341	0.1514	0.89	0.376
Mother's occupation	Unemployed Employed(ref.)	0.5572	0.1829	3.05	0.002
Residence	Rural Urban(ref.)	0.47	0.261	1.8	0.072
Mother's education	Illitrate Litrate(ref.)	-0.218	0.1348	-1.61	0.106
Previous Pregnancy Related Problem	Yes No(ref.)	-0.361	0.2206	-1.64	0.102
ANC follow-up	No Yes(ref.)	0.144	0.2357	0.61	0.541
Number of Children		0.1314	0.0544	2.42	0.016
Final Decision Maker	Husband Women Jointly(ref.)	0.8006 -0.005	0.2016 0.1949	3.97 -0.02	<.0001 0.981
Birth Preparedness	Not well-prepared Well-prepared(ref.)	0.3565	0.2473	1.44	0.149
Mother's Knowledge on Danger Signs.	Poor Good(ref.)	0.5216	0.2394	2.18	0.029
Delay Time		-0.383	0.0797	-4.8	<.0001

DISCUSSION

The objective of this study was to assess the associated factors of the maternal delays for institutional delivery service utilization in Selected Gamo Zone Health Centres, Southern Ethiopia in 2019.

We found that the mean age of respondents was 29 years (range from 19 to 40 years). Out of the total 391 mothers, 266 (68.03%) were unemployed and 125 (31.97%) were employed. The GEE result showed that the mother's occupation, number of children, final decision maker for institutional delivery service utilization, mother's knowledge on danger signs of pregnancy and childbirth and delay time were found to be significantly associated with maternal delays.

The result of this study showed that the maternal delay in the utilization of institutional delivery service was significantly influenced by the occupation of the mother. Unemployed mothers were more likely to had maternal delays in the utilization of institutional delivery service than employed mothers. This finding is inconsistent with the study findings in Bahir Dar, Amhara region [3]. The study conducted at Jimma also showed that unemployed mothers have been delayed employed ones [27].

The present study shows that mothers whose poor knowledge on danger signs of pregnancy and childbirth more likely to experience the maternal delay of institutional delivery service as compared to those who had good knowledge. This finding in line with a study conducted in Tanzania [21].

The variable number of children has a positive, significant coefficient, meaning that between the two populations with different numbers of children, the population with the many numbers of children had a higher expected probability of maternal delays. This finding is consistent with the findings from studies in Yem special district, Southern Ethiopia, Bangladesh and Nigeria [22-24]. This might due to women who have many numbers of children, develop experience and confidence on child-birth, and hence might delay to utilize delivery services.

Final decision power about the place of delivery was found to be a strong predictor of institutional delivery. Mothers whose husband made decisions for institutional delivery service utilization were more likely maternal delay compared to mothers who decided with their husbands. This finding was also consistent with studies done in Hadya zone and Oromia in Holeta town [25, 26]. Further, this study is similar to those of studies conducted in Bahir Dar, Amhara region and Yem special district, Southern Ethiopia [3, 22]. This might be due to husband's dominance in decision making and hence, increase the risk of delay.

CONCLUSION

The maternal delay time is significantly determined by the mother's occupation, the number of children, final decision maker for institutional delivery service utilization, mother's knowledge on danger signs of pregnancy and childbirth and delay time. Therefore, due attention needs to be given to encourage unemployed mothers, promoting couples in involvement in decision making for institutional delivery service utilization, and creating awareness on danger signs of pregnancy and childbirth.

DECLARATIONS

Author Contributions

All authors contributed to data analysis, drafting and revising the article, gave final approval of version to be published and agree to be accountable for all aspects of the worker.

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Competing interests

The authors declare that they have no competing interest Availability of data and materials

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Table 4: Regression: Model Based and Empirical Standard Errors for GEE with Exchangeable Correlation Estimated.

Variable	Empirical(St. Error)	Model Based(St. Error)
Intercept	0.3618	0.3453
Religion	0.1514	0.1531
Mother's occupation	0.1829	0.1767
Residence	0.261	0.2499
Mother's education	0.1348	0.1344
Previous Pregnancy	0.2206	0.212
ANC follow-up	0.2357	0.2268
Number of Children	0.0544	0.0518
Final Decision Maker	0.2016	0.1992
Delivery Service Utilization	0.1949	0.2037
Birth Preparedness	0.2473	0.2249
Mother's Knowledge on Danger Signs.	0.2394	0.2173
Delay Time	0.0797	0.0766

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DO LABORING WOMEN ACCOMPANIED BY THEIR COMPANION OF CHOICE DURING THE FIRST STAGE OF LABOR? A CASE OF PARTURIENT WOMEN IN ARBA MINCH TOWN PUBLIC HEALTH FACILITIES, SOUTHERN ETHIOPIA

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ABSTRACT

BACKGROUND: Labor companionship has numerous effects on childbirth process and birth outcomes. However, it doesn't get enough attention in low and middle-income countries like Ethiopia. This study intended to assess the status of the companionship of choice during the first stage of labor among parturient women at public health facilities in Arba Minch town, South Ethiopia

METHODS: An institution-based cross-sectional analytical study design was conducted among 418 study participants from October 1 to November 30, 2019. Systematic random sampling method was employed. With face-to-face interviewer-administered questionnaires to collect the data. Data were entered into Epi data version 4.4.3.1 and exported to SPSS version 25.0 for further analysis. Bivariate and multivariable logistic regression analyses were done and a p-value < 0.05 with a 95% confidence level was used to declare statistical significance.

RESULTS: Only 237(58.2%, 95 % CI: 53%, 63%) of laboring women were accompanied by their companion of choice, having current obstetrics complication (AOR= 2.57, 95%, CI: 1.42- 4.64), being primipara (AOR= 2.18, 95%CI: 1.31- 3.48), having antenatal care (AOR= 2.92, 95% CI: 1.31-n6.49), giving birth at health center (AOR= 2.76, 95%CI: 1.74- 4.37) and being aware about companionship during labor (AOR=3.06, 95%CI, 1.44-6.47) were the independent predictors of labor companionship.

CONCLUSIONS: A significant number of participants had not been accompanied by their companion of choice during the first stage of labor in this study area. Health facilities and health care professionals need to provide appropriate information about companionship during labor and allow companions of every laboring woman during childbirth unless the risk of allowing overshadows its profits.

KEYWORDS: Companionship, Arbaminch town, and labor.

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INTRODUCTION

Childbirth is considered a period of developing extreme anxiety, fear, emotional disturbance, and stress in women's life. Across times and cultures, women have been supported during labor by other women who are skilled in providing continuous emotional and physical support. When childbirth moved to hospitals, this component of supportive care was largely lost and woman develops a feeling of insecurity in the absence of familiar people in an unfamiliar environment [1, 2]. Having a labor companion is likely to positively influence women's coping level with labor induced stress and adapt to a strange environment; when someone she knows is continuously assisted her, encouraging and appreciating her efforts during labor, she will easily cope with the stressful situation [3].

Women who have been accompanied by members of her families or friends were less likely to use analgesics, more likely to be satisfied with their labor experience, shorter duration of labor, and spontaneous vaginal deliveries. Moreover, their offspring are fewer to have a low 5-minute Apgar score [4].

Hence continuous support during labor was recommended for all women but in reality, there is a wide range of cultural and societal differences in childbirth support systems. In developed countries, the main social supporters are usually partners or close relatives. However, in many developing countries like South America and Africa, companionship during labor (CDL) is not a routine practice [5].

World health organization(WHO) recommends that every parturient woman is offered the option to experience labor and childbirth with a companion of her choice while in labor [6].

Common components of support provided by birth companions include emotional support informational, comfort measures, advocacy and instrumental support. Maternal and newborn mortality is a global challenge; the reduction of this problem requires a multidimensional approach. Promoting the practice of skilled birth attendants at delivery and use health facility with essential obstetrics care is basic to improve these conditions [7].

Regardless of clear evidence and the developing emphasis on respectful maternity care (RMC), many health-care facilities still do not permit or not promote one of the core components of RMC which the practice of companionship during labor [8, 9].

Reasons were identified that hinders the practice of labor supports, such as the lack of national or institutional policies that allow laboring women to have a partner, the physical infrastructure of health-care facilities, which limits privacy and contributes to overcrowding of ward and difficulties in maintaining hygiene standards, limited awareness and undesirable attitudes of health-care workers and managers about the benefits of labor companionship [10].

The implementation of this cost-effective intervention in labor and the challenge associated with it is still a major problem in developing countries [8, 9].

One of the indicators in the International Federation of Gynecology and Obstetrics (FIGO) guideline of 2015 on Mother friendly care has a written policy that encourages women to have at least one person of their choice to be with her throughout the parturition process [11].

Nowadays, labor companion is increasingly being included in the maternal health guidelines of many countries, including in low and middle-income countries (LMIC). However, little is known about the extent to which labor companionship is practiced especially, in most of sub-Saharan Africa (SSA), including Ethiopia [10, 12].

In Ethiopia, labor companionship is not well studied. So this study is meant to assess practice of companionship during first-stage labor and associated factors among parturient women who delivery at Arbaminch town public health institutions, South Ethiopia.

METHODS

Study setting and period

The study was conducted in Arba Minch town public health facilities from October 1 to November, 30/2019.

Arbaminch town is the administrative city of the Gamo zone, southern Ethiopia, it is 454km far in the south of Addis Ababa (the capital city of Ethiopia) and about 280 Km from Hawassa (the capital of SNNP). The town is segmented into 4-sub city and 11 kebeles (the smallest administrative structure in Ethiopia). The town has a total population of 112,724 among those (50.2%) of them were females, 22,113 women were contraceptive users.

The number of both public and private health facilities in Arba Minch town are 1 governmental general hospital, 2 health centers, 35 private clinics, 12 drug store, and 2 community pharmacy [13].

Study design

Institution-based cross-sectional analytical study design was conducted.

Populations

Source populations

All women who had got labor and delivery services at Arba Minch town public health institutions.

Study population

All women who had got labor and delivery services at Arba Minch town public health institutions during the study period.

Eligibility criteria

Inclusion criteria

All women who were laboring and gave birth at Arba Minch town public health facilities.

Exclusion criteria

All parturient women who were seriously ill and unable to respond to the questionnaire.

Sample size determination

The sample size was calculated using a single population proportion formula by considering the following assumptions: 95% confidence level, a margin of error (0.05), p= 44.7% from the study conducted in Tanzania,2016 [14]. After considering a 10% non-response rate sample size is 418.

Sampling techniques & procedure

Proportional allocation was done based on the number of women who give birth at each facility in the two months preceding the data collection period. Systematic random sampling method was used with k-value of 2.Therefore; the first women from each health institution were selected by lottery method and every other woman was taken.

Study Variables

Dependent variable

Utilization of companionship during first stage of labor

Independent variables

Socio-demographic variables: Age, marital status, education, occupation, religion and ethnicity, husband level of education, family income.

Obstetric factors: Parity, having ANC, birth place, history of CDL, pregnancy type, birth outcome, having current obstetrics complication

Knowledge and desire: women desire to have CDL and awareness of companionship

Facility & providers related factors: conduciveness of ward, types of health facility and providers workload

Data collection tools

Adapted and semi-structured questionnaire was used to collect data. Trained interviewers were conducted the interview after obtaining written consent from each participant. The questionnaire was developed in English language and then translated into Amharic. It was translated back into the English language to confirm correct and precise interpretation. Six diploma midwives data collectors and three BSc midwives supervisors were recruited.

Data quality control

Pretest was done on 5 % of sample size to ensure its consistency and validity. One day training was given for data collectors and supervisors about the methodology and questionnaires by the principal investigator. After data collection, the collected data were rechecked for completeness and consistencies.

Data processing and analysis

Data were coded, entered, and cleaned using Epi Data version 4.4.3.1 software and finally exported into SPSS version 25.0 for analysis. Descriptive statistics were determined and the result was

presented in tables, charts, and graphs. Binary logistic regression was used for the analysis of the outcome variable.

A Hosmer-Lemeshow test was done to test for model fitness. Bivariate analysis was carried out to identify the factors associated with the utilization of labor companionship.

All variables were taken into the multivariable model by considering a p-value of < 0.25, to see the independent effect of each variable on the outcome variable. The multi-co-linearity test was carried out. Finally, the result of bivariate and multivariable logistic regression analysis was presented in a crude and adjusted odds ratio with 95% confidence intervals. All tests were two-sided and P< 0.05 was considered statistically significant.

Ethics consideration

Ethical clearance obtained from Arba Minch University College of medicine and Health Science, institutional review board before starting the fieldwork. An official letter of co-operation was written to Arba Minch Town Administrative Health Bureau. Respondents informed about the objective and purpose of the study and informed consent obtained from each respondent. Moreover, all the study participants informed that they have a full right to participate or decline from participating in the study and the study participants assured for an attainment of confidentiality of the information obtained from them.

RESULTS

Socio-demographic features of study subjects

Four-hundred seven women have participated in the study which makes a 97.3% response rate. The mean age of the respondents was 26 years (SD± 4.86 years) and one hundred eighty-one (44.5%) respondents were between the age group of 25 – 34 years. 281 (69%) of respondents were urban residents.

Regarding marital status, 386 (94.8%) of the study participants were married. 197(48.4%) were orthodox Christian followers. From the respondents, 146(35.9%) of women had completed primary education and 105 (25.8%) had secondary education.

Half of the respondents were from Gamo ethnic group (51.4%) and followed by Gofa ethnic group 68(16.7%). Regarding women occupation, more than half of the respondents (52.1%) were* unemployed. The median household monthly income was 3000.00 ETB with an IQR of 3000.00 ETB.133 (32.7%) of participant's husband had secondary education and 69(17%) had no formal education (Table 1).

Table 1: Socio-demographic characteristics of the study participants, Arba Minch town, south Ethiopia, 2019, (N=407).

Variables		Frequency(n)	Percentage (%)
Age	<25	171	42
	25-34	181	44.5
	≥35	55	13.5
Residency	Rural	126	31
	Urban	281	69
Marital status	Married	386	94.8
	Single	11	2.7
	Divorced	8	2
	Widowed	2	0.5
Religion	Orthodox	197	48.4
	Protestant	162	39.8
	Muslim	31	7.6
	Catholic	14	3.4
	Others*	3	0.7
Ethnicity	Gamo	209	51.4
	Gofa	68	16.7
	Welayta	25	6.1
	Amhara	33	8.1
	Oromo	21	5.2
	Others**	51	12.5
Educational level	No formal education	87	21.4
	primary	146	35.9
	Secondary	105	25.8
	Above secondary	69	17.0
Occupation	Housewife	212	52.1
	Government employee	69	17.0
	NGO/private	99	24.3
	Others^	27	6.6
Household monthly income	<3000 ETB	167	41
	>=3000 ETB	240	59
Husband educational level	No formal education	69	17.0
	Primary	102	25.1
	Secondary	133	32.7
	Above secondary	103	25.3

Key=*traditional, Jehovah witness, **Konso, Derashe, Gurage, Amaro, ^ Students, Daily

Utilization of labor companionship

Two hundred thirty-seven (58.2%) with 95% CI (53%, 63%) of the laboring women were accompanied by their family members or social network during the recent laboring time in the health institutions. The husband was the predominant accompanying person 96(40.5%), mother/mother in law (24.5%), sister/brother/in-law (21.1%) and friends/neighbors (13%).

Reason of unaccompanied

From those who had no CDL 170(41.8%), 105 (61.2%) of participants mentioned that providers' denial was the main reason for not to be accompanied (figure 1).

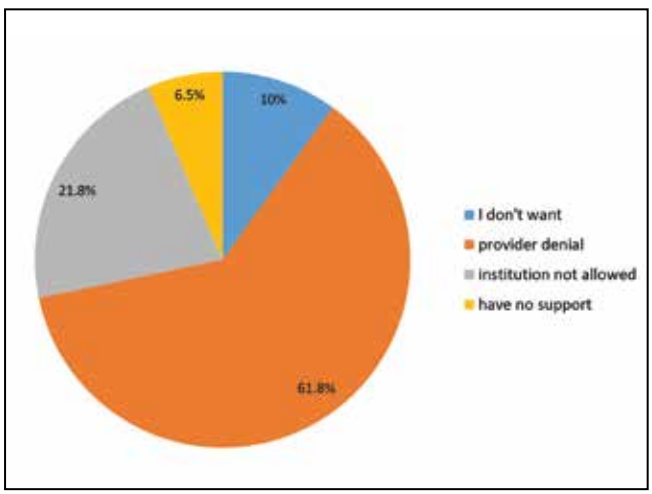


Figure1: the distributions of reason not to be accompanied during labor in Arbaminch town public health facilities, south Ethiopia 2019

- Provider denial is the refusal of care provider to have support person for laboring women, even if the facility allows.
- Institution not allowed is the institution have ground rule not to practice CDL due to different reasons like crowdedness of the room…

Obstetrics feature of respondents

Two hundred thirty (56.5%) of the study respondents were multiparous. Of the multiparous women who delivered in health facilities in their previous most recent childbirth, 54(29.3%) had labor companionship.

One hundred sixty three (89.2%) women had antenatal follow up during this pregnancy and 235(64.7%) of women followed at health centers, (29.8%) at the hospital, and 20(5.5%) at private facilities

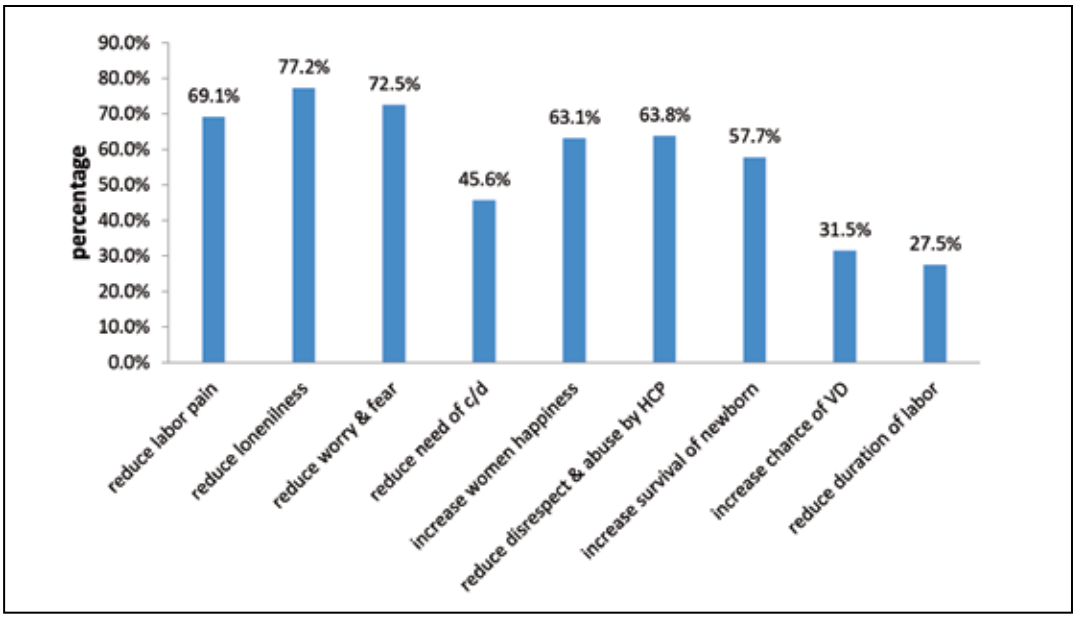
Among all 346 (85%) respondents perceived that allowing laboring women to have a companion during childbirth promotes institutional delivery. Among all post-partum women eighty-seven (21.4%) respondents had complications during the index pregnancy and labor. Among the total respondents, 387(95.1%) of them had planned pregnancy.

Knowledge and desire for companionship during labor

Of all, fifty-two (12.8%) women knew that every woman has the right to have their companion during labor, benefit, and expected practice in the health facilities. The main source of information about the right to have companionship was heard from other people 25 (43.9%). 376 (92.6%) of respondents have a desire to be accompanied by their support person during labor. From those who have not to desire 31(7.4%), the main reason for not having a desire of labor companion is fear of exposing 22(71%) to the support person.

Benefits of companionship during labor

Two hundred fifty six (27.8%) women perceived that companionship has benefits for every laboring woman. (Figure 2)



C/d-cesarean delivery, HCP-health care providers, VD-vaginal delivery

Figure 2: Benefits of companionship during labor mentioned by respondents in Arbaminch town public health facilities, south Ethiopia, 2019

Facility and health care providers related characteristics

Among respondents, 182(44.7%) of the laboring women said that health care providers were overworked (a care provider who give care for more than one clients at a time, from respondents perspective). And also, eighty-five (79.1%) of postnatal women perceived that the labor ward is not comfortable to have companions. Regarding the place of delivery, more than half (51.8%) of women obtained intra-natal and postnatal care at the hospital.

Factors associated with having a companion during labor

On bivariate analysis, educational level, husband educational level, occupation, type of pregnancy, desire to have support person, complication during the index pregnancy and labor, parity, having ANC follow up, birth place, and knowledge have a significant association with utilization of labor companions.

Women who had a complication in the current pregnancy and labor (AOR=2.57, 95% CI, 1.42, 4.64) were 2.57 times more to be accompanied by their companion of choice than those women who had no complication. Parturient women who give birth for the first time had significantly greater odds of being accompanied by their companion (AOR=2.18, 95% CI, 1.36, 3.48) during labor than multiparous women.

Women who had antenatal follow up at the recent pregnancy (AOR=2.92, 95% CI, 1.31, 6.49) were 2.92 times more likely to have been supported than women who had never had antenatal follow up. The odds of having companionship during labor was three times (AOR=2.76, 95% CI, 1.74, 4.37) more among women who had got delivery service at health centers compared to women who had got service at the hospital. Additionally, women who had good knowledge about labor companion (AOR= 3.06, 95% CI, 1.44, 6.47) were three times more to be accompanied than women who have poor knowledge of companionship during labor in the health facilities (Table 2).

Table 1: Socio-demographic characteristics of the study participants, Arba Minch town, south Ethiopia, 2019, (N=407).

Variables		Having companionship during labor		Odd Ratio @ CI (95%)		P value
		Yes,N (%)	No,N(%)	COR	AOR	
Women education	No education	37(42.5)	50(57.5)	1	1	
	Primary	87(59.6)	59(40.4)	1.99(1.16, 3.41)	1.43(0.77, 2.63)	0.19
	Secondary	67(63.8)	38(36.2)	2.38(1.33, 4.26)	1.59(0.80, 3.17)	0.14
	Above 2ry	46(66.7)	23(33.3)	2.70(1.40, 5.21)	1.60(0.70, 3.65)	0.24
Husband educational level	2ry & above	167(61.4)	105(38.6)	1.47(0.97, 2.24)	0.94(0.55, 1.59)	0.74
	No & primary	70(51.9)	65(48.1)	1	1	
Women occupation	Employed	125(64.1)	70(35.9)	1.59(1.07,2.37)	1.15(0.70, 1.90)	0.64
	Unemployed	112(52.8)	100(47.2)	1	1	
Desire to have labor companion	Yes	223(59.3)	153(40.7)	1.77(0.84, 3.69)	1.31(0.58, 2.97)	0.01
	No	14(45.2)	17(54.8)	1	1	
Current obstetrics complications	Yes	63(72.4)	24(27.6)	2.20(1.31, 3.70)	2.57(1.42, 4.64)	0.01
	No	174(54.4)	146(45.6)	1	1	
Parity	Primipara	126(71.2)	51(28.8)	2.64(1.74, 4.01)	2.18(1.36, 3.48)	0.02
	Multiparous	111(48.3)	119(51.7)	1	1	
Antenatal care	Yes	226(62.3)	137(37.7)	4.94(2.42, 10.11)	2.92(1.31, 6.49)	0.05
	No	11(25)	33(75)	1	1	
Place of current delivery	Health centers	130(66.3)	66(33.7)	1.9(1.28, 2.85)	2.76(1.74, 4.37)	0.00
	Hospital	107(50.7)	104(49.3)	1	1	
Planed & wanted pregnancy	Yes	231(59.7)	156(40.3)	3.45(1.30, 9.18)	2.34(0.82, 6.69)	0.06
	No	6(30)	14(70)	1	1	
Knowledge	Good knowledge	40(76.9)	12(23.1)	2.67(1.37, 5.26)	3.06(1.44, 6.47)	0.03
	Poor knowledge	197(55.5)	158(44.8)	1	1	

CI = Confidence Interval, COR = Crude Odds Ratio, AOR=Adjusted Odds Ratio

DISCUSSION

In this study the utilization level of labor companionship and associated factors in Arbaminch town public health facilities was investigated. The overall utilization of companionship during labor in the health facilities among study participants was found to be 58.2% at 95% CI (53%, 63%). The finding of this study is congruent with the studies done in Brazil (57.1%) [16].

And also, the finding in this study is lower than the study finding (67%) done in Kenya [17].

This variation could be due to the cultural difference in labor companion and policy that enforce health care providers to allow labor companion and also study design difference. In contrast, this finding is higher compared to the study finding done in South Africa (24.2%) [18]. This discrepancy could be due to sampling size differences because they used a smaller sample size, health system improvement (time elapsed) and methodological difference may attribute to this difference.

In this study primiparous women (delivered for the first time) were 2.18 times more to be accompanied by their labor companion during parturition in the health facilities than those women who were multiparous. This is in line with the study finding done in Brazil [16]. This could be due to the similarity of the socio-demographic characteristics of the study participants.

Regarding labor complications, in the current study women who had obstetrics or medical complications during the index pregnancy and labor were 2.57 times more to be escorted by their support person compared to those women who had never been experiencing any complications during the current pregnancy and labor. This is supported by a study conducted in Tanzania; parturient women who develop a complication during labor had significantly greater odds of having a labor companionship during labor than women who had a normal pregnancy and labor [14].

But in contrast, a study in Kenya[17] showed that women who had experienced complications at labor are 66% less likely to have a labor companion while giving birth in the health facilities.

This difference could be encountered due to women with labor complication needs strict follow up by health care provider alone, to provide appropriate management without intervention, and to avoid additional stress by her family members.

Besides, the current study showed that respondents who obtained intra -natal and postnatal care in the health centers were three times more to be accompanied by their companion of choice during labor in the health facilities. This is strengthened by the study finding carried out in Ethiopian public health facility [19], women who delivered at health centers have a higher chance of having companionship than women who delivered in a hospital. And also, It is supported by a study finding done in Kenya [17]. This could be explained by the labor ward in the hospital that is simultaneously occupied and crowded by many laboring women and their family attendants. This might obligate the health care providers in order not to allow labor companions for all of the laboring women in the ward.

In this study women who had good knowledge about labor companionship were three times more likely to be accompanied by their support person than women who had poor knowledge on labor companion while laboring in the health facilities.

The current study showed that despite the fact that, ANC accounts only 12.4% as a source of information about companionship, women who had antenatal follow up during the recent pregnancy were 2.79 times more to have been supported than women who had never had antenatal follow up. This finding is consistent with the study done in Saudi Arabia [20].

Women who had antennal care follow up during pregnancy were more likely to have been supported by their labor companion than women who have no antenatal follow up. This finding is attributed due to the fact that having antenatal follow up

encourages the women to ask their aspiration to have labor companion and implementing it during labor in the health facilities.

CONCLUSIONS AND RECOMMENDATION

In this study, despite the importance of labor companion on the improvements of institutional delivery as well as quality care for mother and newborn, substantial number of participants had not been accompanied at the time of parturition in the health facilities. Women who had no complications during the index pregnancy and labor, who had no ANC follow up, women who had obtained care at hospital, women who had poor knowledge about labor companion and multiparous women were less likely to be accompanied during labor while giving birth in the health facilities .To improve this low utilization of labor companion health institutions and health care providers should provide information at antenatal care follow up about companionship and allowing it for every laboring woman while giving birth in the health facilities.

DECLARATIONS:

Consent for publication

Not applicable

Availability of data and material

The data that support the findings of this study are available but some restrictions may apply to the availability of these data as there are some sensitive issues. However, data are available from the corresponding authors upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

Author's contribution

KB, TG, GG, BW YA and GD conceived the study and undertook statistical analysis. TG, FW, YA, GA and GG supervised the study design and statistical analysis. KB, GD and TG contributed to the writing of the manuscript and all authors approved the submitted version of the manuscript.

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SEXUAL ASSAULT AND ASSOCIATED FACTORS AMONG WOMEN: A CROSS-SECTIONAL STUDY IN HAWASSA UNIVERSITY COMPREHENSIVE SPECIALIZED HOSPITAL, ETHIOPIA

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ABSTRACT

BACKGROUND: Sexual assault is a major form of sexual violence affecting one out of every five women in the world and it has many consequences including sexually transmitted infections, posttraumatic stress disorder, and risk of unintended pregnancy. Thus, this study was aimed to assess the magnitude, complication, and factors associated with sexual assault among women who visited the gynecologic outpatient department of Hawassa University Comprehensive Specialized Hospital.

METHODS: Cross-sectional study was conducted from January 1 to October 30, 2019. The self-administered questionnaire developed from "WHO multi-country study on women health" and from "sexual violence medical evaluation certificate format" was used to collect data. Descriptive analysis was done on sexual assault-related characteristics and binary and multivariate logistic regression analyses were done to identify factors associated with sexual assault.

RESULTS: The prevalence of sexual assault was 10.8% (n=43). Some 79.1% (n=34) of survivors were under the age of 18 years. 25% (n=7) of the survivors tested for pregnancy were positive and some 7% (n=3) of each were positive for Hepatitis B and Trichomonas vaginalis. A woman who was less than 18 years old [aOR=10.7, 95%CI (3.37, 33.85)], unmarried [aOR=9.2, 95% CI (2.11, 40.42)], had a primary level of education [aOR=8.9, 95% CI (2.37, 33.06)] and a monthly income less than 1500 birr [aOR=6.7, 95% CI (1.54, 29.50)] had higher odds of experiencing sexual assault than their counterparts who were adult, married, secondary- or higher level of education and a monthly income more than 1500 birr.

CONCLUSIONS: In this study, age, marital status, monthly income, and educational level were significantly associated with sexual assault. Creating awareness at school, family, and community level is vital to prevent the consequences of sexual assault.

KEYWORDS: Women, Pregnancy, Sexual assault, Sexually transmitted infection.

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INTRODUCTION

Sexual violence is defined as a sexual act committed against someone without the person's freely given consent [1]. Sexual assault is a major form of sexual violence affecting women and it includes rape, attempted rape, sexual abuse, and sexual exploitation [2].

Globally 1 in 5 women, experienced completed or attempted rape during their lifetime [1, 2]. According to a 2013 WHO analysis conducted using existing data from over 80 countries, 1 in 3 women has experienced physical and/or sexual violence. Large population-based surveys indicated a lifetime prevalence of 13-39% sexual violence among women and 3% among men though vulnerable groups are not included in the study [2, 3].

In Ethiopia, according to the 2016 DHS report, thirty-four percent of ever-married women age 15-49 have experienced spousal physical, sexual, or emotional violence. Physical and emotional violence were experienced by 24% each, and sexual violence by10% [4].

Consequences of a sexual assault may be manifested biologically, psychologically, and sociologically [5]. Medical consequences of sexual assault include sexually transmitted infections; mental health conditions, including posttraumatic stress disorder; and risk of unintended pregnancy in reproductive-aged survivors of sexual assault [6].

The risk of sexual assault varies among individuals and some groups of individuals are at a higher risk of sexual assault. Women who are young, poor, living in social housing, in poor health, single and separated or divorced, migrant and trafficked women and those involved in the sex industry are more likely to encounter sexual violence [7]. Sexual assault is currently an issue at the forefront of public life but there are limited institutional based studies in Ethiopia. Although there are some community based studies done covering small areas in Sidama Zone, there is no study conducted in Hawassa University Comprehensive Specialized Hospital to investigate the magnitude and complications of sexual assault. Thus, This study was aimed to assess the magnitude of sexual assault, associated complications, and risk factors.

SUBJECTS AND METHODS

Study area and period: The study was conducted at the Gynecologic Outpatient Department of Hawassa University Comprehensive Specialized Hospital from January 1 to October 30, 2019.

Study design: Cross-sectional study design was applied.

Study participants: Women who visited the gynecologic outpatient department of Hawassa university's comprehensive specialized hospital for service care.

Exclusion criteria: Women with psychiatric and critical illnesses were excluded from the study.

Sample size determination: The desired sample size was calculated using a single population proportion formula.

$$n = \frac{Z(\alpha/2)^2\, p(1-p)}{d^2}$$

Where

n = the minimum sample size.

Zα/2 = 1.96 for 95% confidence level.

d = Margin of error = 0.04

p = Proportion of sexual assault.

Based on a study conducted at selected hospitals in Tigray region [8], the prevalence of sexual assault was 12.7% (0.127). Thus, considering 1.5 design effect and 5% non-response rate, the total sample size was:

$$n = \frac{(1.96)^2 \times 0.127(1-0.127)}{(0.04)^2} = 266$$

n = (266 + 13) x 1.5 = 418

Sampling technique and procedure: The study participants were selected by systematic random sampling. Data obtained from the OPD registry book showed that ten months before the study period, around 5000 clients visited Hawassa University Comprehensive Specialized Hospital Gynecologic Outpatient Department. Considering six months of data collection, a total population of

3000 was used to calculate the sampling interval. Thus, by dividing the total population by the sample size, the sampling interval was found to be 8. After random selection of the first sample, every 8th person was included in the study.

Data collection: Self-administered questionnaire adapted from WHO multi-country study on women health and from sexual violence medical evaluation certificate was used to collect data. Data for minors and children were obtained from their attendants. The data was collected by trained year two residents during working hours and the completeness of the data was consistently checked by the principal investigators.

Data processing and analysis: Each questionnaire was checked for completeness and consistency and cleaned. The data was analyzed using SPSS version 21. Descriptive analysis was done on socio-demographic characteristics and sexual assault-related characteristics. Binary and multivariate logistic regression analyses were done to identify factors associated with sexual assault. A level of $p < 0.05$ was considered statistically significant.

Ethical consideration: Ethical clearance and approval were obtained from the ethical review board of Hawassa University College of Medicine and Health Sciences. Permission to conduct the study was asked and obtained from the Hospital chief clinical service officer. Written informed consent was obtained from the study participants and parents or guardians for those whose age was below 18 years. Any refusal of the parents, guardians, or child to participate in the study was respected and confidentiality of response was maintained throughout the study.

Operational definition

Sexual violence: any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic a person's sexuality, using coercion, threats of harm or physical force, by any person regardless of relationship to the survivor, in any setting, including but not limited to home and work environments.

Sexual assault: a major form of sexual violence affecting women and it includes rape, attempted rape, sexual abuse and sexual exploitation.

Rape: forced physical penetration of the vulva or anus using the penis or other body parts or objects and any attempt to do so is called attempted rape.

Sexual abuse: other non-consensual sexual acts, not including rape or attempted rape and includes acts performed on a minor.

Perpetrator/assailant: a male or female, group or institution that inflicts, supports, or condones.

Survivor/victim: a person who has lived through an incident of sexual assault. Survivor is a more preferred term as it has a positive connotation.

RESULTS

Socio-demographic Characteristics of the Study Participants

Table 1 summarizes the socio-demographic characteristics of the study participants. A total of 399 clients have participated in the study. The mean age of the respondents was 28.97 ± 10.61 and about 79.1% (n=34) of the survivors were under the age of 18 years. Most of the survivors were unmarried (90.7%, n=39), primary school attendees (88.4%, n=38), and average monthly family income of less than 1500 birr (60.5%, n=26).

Table 1: Socio-demographic characteristics of the study participants, Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, 2019.

Variables	Categories	Sexual assault	
		Yes, n (%)	No, n (%)
Age	<18 years	34 (79.1)	36 (10.1)
	≥ 18 years	9 (20.9)	320 (89.9)
Marital status	Married	4 (9.3)	304 (85.4)
	Unmarried	39 (90.7)	52 (14.6)
Education status	Primary school	38 (88.4)	119 (33.4)
	High school and above	5 (11.6)	237 (66.6)
Religion	Orthodox	13 (30.2)	107 (30.1)
	Muslim	5 (11.6)	97 (27.2)
	Protestant	25 (58.1)	152 (42.7)
Residence	Urban	23 (53.5)	221 (62.1)
	Rural	20 (46.5)	135 (37.9)
Monthly income	< 1500 birr	26 (60.5)	78 (21.9)
	≥ 1500 birr	17 (39.5)	278 (78.1)

Characteristics of Sexual Assault among the Study Participants

The overall prevalence of sexual assault was 10.8% (n=43). Rape was the most prevalent type of sexual assault (72.1%, n=31) followed by rape attempts (25.6%, n=11). About 14.3% (n=7) of the survivors had a previous history of sexual assault and 62.8% (n=27) were assaulted by someone known by the survivor or their family. 83.7% (n=36) of the survivors were assaulted by a single assailant and 60.5% (n=26) of sexual assault cases happened in the assailant's home. The majority of the survivors (55.8%, n=24) came to the hospital after 5 days (Table 2). However, the duration of presentation to the hospital after sexual assault ranges from 1 day to 120 days with a mean duration of 17 days.

Table 2- Characteristics of sexual assault among the study participants, Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, 2019.

Characteristics	Categories	Frequency (n=43)	Percentage
Type of sexual assault	Rape	31	72.1
	Rape attempt	11	25.5
	Sexual abuse	1	2.4
Previous history of sexual assault	Yes 7	14.3	
	No	36	83.7
Place of sexual assault	Own Home	13	30.2
	Assailants home	26	60.5
	Other places	4	9.3
Perpetrators relationship	Stranger	16	37.2
	Known by the survivor	27	62.8
Number of assailants	1 36	83.7	
	≥ 2 7	16.3	
Brought to the hospital by	Herself	3	6.9
	Family	26	60.4
	Police	14	32.7
Duration of presentation to the hospital	≤ 1 day	5	11.6
	2-3 days	9	20.9
	4-5 days	5	11.6
	≥ 6 days	24	55.8
Time of sexual assault	Day	22	51.2
	Night	21	48.8
Alcohol or drug use by assailants	Yes 10	23.3	
	No	33	76.7

Complications Associated with Sexual Assault and Emergency Service Provision

Table 3 shows the laboratory tests and sexual assault associated injuries among the survivors. The pregnancy test was done for 65.1% (n=28), HIV test for 90.7% (n=39), and STI screening for all of the cases. Among the survivors tested, 25.0% (n=7) of them were positive for pregnancy at the time of presentation and 7% (n=3) of each were positive for Hepatitis B and Trichomonas vaginalis, however, all tested survivors were negative for HIV test. Among sexual assault cases, 72.1% (n=31) and 32.6% (n=14) had sexual assault-associated genital injuries and non-genital injuries respectively.

Among the cases that were potentially eligible for emergency contraception, 46.7% (n=7) of them were provided with the service. Those survivors who came to the hospital within the first 72 hours after sexual assault (50%, n=7) were provided with post-exposure prophylaxis for HIV, and 74.4% (n=32) survivors were provided with STI prophylaxis (Table 4).

Table 3: Laboratory tests and sexual assault associated injuries among the study participants, Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, 2019.

Variables	Categories	Frequency	Percentage
Pregnancy test (n=28)	Positive	7	25.0
	Negative	21	75.0
Screening test for STI (n=43)	Hepatitis B	3	7.0
	Trichomonas vaginalis	3	7.0
	Gonorrhea	1	2.3
	None	36	83.7
HIV test (n=39)	Positive	0	0.0
	Negative	39	100.0
Genital injury (n=43)	Fresh hymenal tear	19	44.2
	Old hymenal tear	9	20.9
	Perineal tear	3	7.0
	None	12	27.9
Non-genital injury (n=43)	Bruise	7	16.3
	Abrasion	4	9.3
	Laceration	4	9.3
	None	28	65.1

Table 4: Emergency care provision by the time of presentation to the hospital after sexual assault, Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, 2019.

Variables	Response Options	Time of presentation to the hospital after sexual assault				
		≤ 1 day	2-3 days	4-5 days	≥ 6 days	Total (n=43)
Provisions of Emergency Contraceptive	Yes	0	6(66.7)	1(20)	0	7(16.3)
	No	5(100)	3(33.3)	4(80)	24(100)	36(83.7)
Provisions of post exposure prophylaxis for HIV	Yes	3(60)	8(88.9)	2(40)	1(4.1)	14(32.6)
	No	2(40)	1(11.1)	3(60)	23(95.9)	29(67.4)
Provisions of STI prophylaxis	Yes	3(60)	9(100)	4(80)	16(66.7)	32(74.4)
	No	2(40)	0	1(20)	8(33.3)	11(25.6)

Factors Associated with Sexual Assault among The Study Participants

Table 5 evaluates factors associated with sexual assault. Among the risk factors assessed in the study participants, being younger than 18 years old [aOR=10.7, 95% CI (3.37, 33.85)], and monthly income less of than 1500 birr [aOR=6.7, 95% CI (1.54, 29.50)] were significant determinant factors associated with sexual assault. In this study, being married was found to be less likely to be sexually assaulted. Unmarried women were about 9.2 times more likely to be sexually assaulted. In addition, being in primary school [aOR=8.9, 95% CI (2.37, 33.06)] was also significantly associated with sexual assault.

Table 5: Factors associated with sexual assault among the study participants, Hawassa University Comprehensive Specialized Hospital, Hawassa, Ethiopia, 2019.

Variables	Categories	Sexually assaulted		OR (95% CI)	aOR (95% CI)
		Yes	No		
Age	<18 years	34	36	33.6 (14.92, 75.60)	10.7 (3.37, 33.85)
	≥ 18 years	9	320	1.00	1.00
Relationship status	Married	4	304	1.00	1.00
	Unmarried	39	52	57.0 (19.55, 166.21)	9.2 (2.11, 40.42)
Education status	Primary school	38	119	15.1 (5.81, 39.54)	8.9 (2.37, 33.06)
	High school and above	5	237	1.00	1.00
Religion	Muslim	5	97	1.00	1.00
	Orthodox	13	107	2.4 (0.81, 6.85)	1.8 (0.16, 18.94)
	Protestant	25	152	3.2 (1.18, 8.62)	2.0 (0.21, 18.44)
Place of residency	Urban	23	221	1.00	1.00
	Rural	20	135	1.4 (0.75, 2.69)	1.5 (0.36, 6.14)
Monthly income	< 1500 birr	26	78	5.5 (2.82, 10.56)	6.7 (1.54, 29.50)
	≥ 1500 birr	17	278	1.00	1.00
Previous history of sexual assault	Yes	7	5	13.7 (4.12, 45.22)	14.9 (0.70, 319.48)
	No	36	351	1.00	1.00

DISCUSSION

The results of the present study showed a 10.8% (n=43) prevalence of sexual assault. Our result is comparable with previous studies conducted in different parts of Ethiopia. A 12.7% (n=117) rape prevalence was reported among women who visited Gynecologic Outpatient Departments of Selected Hospital in Tigray region [8]. Studies conducted among high school and university students in Ethiopia reported a prevalence of sexual violence ranging from 16.6% (n=55) to 37.3% (n=200) [9-11]. The most likely cause of the lower prevalence of sexual assault in this study may be due to poor reporting and disclosure of sexual assault due to various reasons including abduction and forced marriage which is becoming a common occurrence around the ouir study area.

Most of the sexual assault cases will end up with some sort of sexual and reproductive health problems like unwanted pregnancy, sexually transmitted infections, and other genital and non-genital injuries. The rate of pregnancy and sexually transmitted infection among sexual assault cases at the time of presentation in this study was comparable with the results of the study done at Jimma university comprehensive hospital [12]. However, in this study, among the survivors who were potentially eligible for emergency contraception and post-exposure prophylaxis for HIV, only a small number of survivors were provided with the service. This indicates that the coverage for these services in this institution is very low and the survivors didn't get proper care provision.

According to the WHO report, being a younger age is one of the risk factors for sexual assault [2]. Studies done in Jimma university comprehensive hospital, Adigrat hospital, and Mekelle University reported a similar finding [12-14]. Similarly, in the present study, being under the age of 18 years was significantly associated with sexual assault.

Our study showed that women with low monthly incomes were more likely to be a victim of sexual assault. Our finding was supported by the WHO report which indicated that factors like low socioeconomic status increase women's risk of sexual assault [2].

In this study, the educational status of primary school was significantly associated with being sexually assaulted. Our result was consistent with the study done among the female administrative staff of Mekelle University which reported that females with the educational status of secondary school or less were significantly associated with sexual violence [14].

In this study, being married was less likely to be associated with sexual assault. This finding was comparable with the study conducted in Butajira Town, South Ethiopia, and in Nairobi, Kenya which showed that being unmarried was significantly associated with sexual assault [9, 15]. However, our result was inconsistent with the WHO report which showed that one of the most important risk factors for women in terms of their vulnerability to sexual assault is being married or cohabiting with a partner [2]. This might be because most women in our country don't report sexual violence committed by their husbands.

CONCLUSION

In this study, the prevalence of sexual assault was high, and most of the survivors were under the age of 18 years. The common type of sexual assault was rape and most of the survivors had genital injuries. The overall provision of emergency contraception, post-exposure prophylaxis for HIV, and prophylaxis for STI were very low, even though screening tests were offered for most survivors. Age, Monthly income, educational level, and marital status were significantly associated with sexual assault.

RECOMMENDATIONS

Awareness should be created at school, family, and community level to prevent the problem of sexaual assault and it's associated complications. The hospital should provide training for care providers on the management of sexual assault cases.

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DISRESPECT AND ABUSIVE MATERNITY CARE AND ASSOCIATED FACTORS IN THE LABOR AND DELIVERY WARDS OF PUBLIC HEALTH FACILITIES IN ASSOSA ZONE, ETHIOPIA

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ABSTRACT

BACKGROUND: Disrespect & abuse (D&A) during maternity care significantly affects a woman's decision to look for services and the quality of care she receives. Yet, its burden is not well identified in the developing regions of Ethiopia, specifically in the study area.

METHODS: Facility-based cross-sectional study design was employed. A total of 437 sampled mothers who attended labor and delivery wards of public health facilities of the Assosa zone were recruited using a systematic random sampling method. Data were collected using a semi-structured interviewer-administered questionnaire which consisted of 25 verification criteria. A binary logistic regression model was fitted to determine the presence of a statistically significant association between predictors and outcome variable at p-value <0.05 and AOR with 95% CI using SPSS version 23.0.

RESULTS: The overall prevalence of D&A was 82.4%, (95% CI: 79.4, 86.4). The most reported types of D&A were non-consented care (68.0%), non-confidentiality (35.5%), physical harm (33.6%), and abandonment or denial of care (20.7%) followed by discrimination, detention in health facilities, and non-dignified care, respectively.

CONCLUSIONS: The overall prevalence of disrespect and abusive maternity care in the study area was high. Thus, healthcare facilities especially, hospitals should be given special attention in terms of staffing, training, and motivating care providers to advance the quality of care they provide.

KEYWORDS: Disrespect; Abusive care; Mistreatment; Childbirth; Maternity care.

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INTRODUCTION

Disrespect and abuse during childbirth are common causes of suffering and violation of human rights in low-income countries and significantly affect the overall utilization of maternal healthcare services [1]. Different scholars defined and classified D&A into distinct manifestations. The predominantly used classification is by Bowser and Hill with seven different manifestations; physical harm, non-confidential care, non-consented care, non-dignified care, discrimination, abandonment or denial of care, and detention in facilities. [2-4].

There is still a high number of women dying daily from pregnancy and childbirth complications worldwide. D&A is one of the multiple factors that hinder the effort of reducing the maternal mortality ratio [4-6].

The status of D&A varies across countries worldwide. It ranges from 17.6% in Ethiopia to 98% in Nigeria [7-10]. Similarly, studies from different parts of Ethiopia show the same pattern [11-15]. The common manifestations of D&A also vary from non-consented, non-dignified care, physical abuse to detention in healthcare facilities [10, 16].

D&A during childbirth is recognized as a major cause of suffering for women and puts significant barriers to women in choosing maternal healthcare services like skilled delivery by many maternal health experts. It significantly affects the mother's intention of delivering in the same facility in the future [4, 11, 17]. As a result, it is becoming a significant community concern in terms of research, service quality, education, human rights, and civil rights activism to improve the utilization and quality of maternity care [18-20].

Although there are different strategies and interventions like Health Sector Transformation Plan [21] and Compassionate and Respectful care [22] available in Ethiopia to provide respectful and compassionate health services, little is known about their effectiveness. Thus, the results of this study will be an input to policy designers, program managers, and service providers, in measuring the prevalence of D&A and identifying contributing factors to develop mitigation strategies in the study area and other regions of Ethiopia with low infrastructure access like roads, power supply, and well-built and equipped buildings.

METHOD AND MATERIALS

Study design, area, and period

The study was conducted in the labor wards of public health facilities in the Assosa zone, Benishangul-Gumuz (BG) region, Ethiopia. A facility-based cross-sectional study design was employed from October 12 – to November 13, 2020.

Study population

The source population was all mothers who have attended labor and delivery wards and gave birth in the public health facilities of the Assosa zone. The study population was sampled mothers from the source population during the study period. Women who used private wings for delivery services and mothers who were immediately referred to another facility due to obstetrics emergencies were excluded from the study.

Sample size determination and sampling technique

A single population proportion formula was used to estimate the sample size required for this study, with a margin of error (d=0.05), and a 95% confidence level ($Z\alpha/2=1.96$) using a proportion of D&A in a study done in 2020 [15]. By taking a 1.5 design effect, and considering a 10% potential non-response rate, the final sample size for this study was 437 mothers. One general hospital, one primary hospital, and 12 health centers in half of the districts in the zone were selected based on the World Health Organization's facility sampling technique recommendation [23]. Proportional allocation to sample size technique was used based on each facility's previous year data [24]. A systematic random sampling method was used to identify the number of study participants from each facility.

Data collection procedures and Analysis

A face-to-face semi-structured interviewer-administered questionnaire was adapted based on the items developed by the Maternal and Child

Health Integrated Program to assess D&A [4]. The questionnaire was developed in English and was translated into the region's working language, Amharic then back to English for clarity and consistency. A pre-test was conducted on 5% [22] of the sample size at a health center out of selected health facilities for the study, and necessary amendments were made before the actual data collection. A two-day training was given for seven bachelor degree holder female data collectors and four supervisors before data collection. Data were collected right after the mother was discharged (exit interview) with regular supervision by the supervisors. Collected data were entered to Epidata version 3.1 and transported to SPSS version 23.0 for analysis. Bivariate logistic regression was carried out to identify candidate variables at a p-value less than 0.25 for final analysis. Multivariate analysis using the backward method was performed to determine the presence of a statistically significant association between independent variables and the outcome variable at a p-value less than or equal to 0.05 and AOR with 95% CI.

Ethical consideration

Ethical clearance was obtained from the Institution Review Broad of the Institute of Health, Jimma University with a reference number of IHRPGY/953/20. An official letter was written by the zonal health department to the respective district health offices, and facility heads approved the request, accordingly. Verbal consent was obtained from each participant before data collection. Confidentiality and privacy were assured by using a coding system, removing any personal identifiers, and conducting all interviews in separate rooms.

RESULTS

Socio-demographic characteristics of study participants

Out of the 437 sampled mothers, 425 of them participated in the study yielding a response rate of 97.25%. The mean age of respondents was 24.4 years (±SD 6.48 years) with the age range of 16-46 years. The majority of respondents (398, 93.9%) were married and 218 (51.3%) of them have not attended formal education. Three hundred forty-three (80.7%) of study subjects resided in rural areas, 167(39.3%) of them were farmers by occupation, and 188 (44.3%) of them were Muslims by religion. The mean monthly income of the respondents was 1607.2 ETB (±SD 1109.3) with a range of 500 ETB-5,000 ETB.

Obstetric history of respondents

Of the total respondents, 197 (46.4%) and 193 (45.4%) had visited health centers and a general hospital, respectively, and 374 (88.0%) had at least one Antenatal Care (ANC) visit at a healthcare facility during the current pregnancy while only 47 (12.5%) of them had four ANCs and above. Also, 167 (39.3%) of them had given birth at home previously and 133 (31.3%) mothers have encountered birth complications like obstructed labor, hypertensive disorders, and the like. Nearly four out of five deliveries (339, 79.8%) were attended by only one healthcare professional.

Prevalence of D&A during labor and delivery

Out of the 425 mothers, 350 (82.4%) reported that they had faced at least one type of D&A during the current delivery. The most reported types of D&A were non-consented care (68.0%), non-confidentiality and privacy (35.5%), physical harm (33.6%), and abandonment or denial of care (20.7%). The study has also found that 14.8%, 8.9%, and 3.8% of mothers reported discrimination, detention in health facilities, and non-dignified care, respectively. (Table 1).

Table 1. Prevalence of D&A, Assosa Zone, BG region, Ethiopia, October 2020.

Variables (n=425)	Frequency	Percent
Experienced at least one form of D&A during labor and delivery	350	82.4%
Physical Harm	143	33.6%
Physically abused during labor/delivery (force/slapped /hit/beat)	33	7.8%
Verbally (insult) abuse during labor or delivery	11	2.6%
A separate mother from the baby without medical indication	0	0%
Denied from food or fluid in labor unless medically necessitated	13	3.1%
Receiving unnecessary uncomfortable/pain-relief treatment	80	18.8%
Support staffs insult me and my companion	13	3.1%
Demonstrating caring in a culturally inappropriate way	5	1.2%
Non-consented care:	289	68.0%
Providers did not introduce themselves	236	55.5%
Providers do not encourage the mother to ask questions	31	7.3%
Providers do not respond to the mother's question with promptness, politeness, and truthfulness	10	2.4%
The provider didn't explain what is being done and what to expect throughout labor and birth	35	8.2%
Providers didn't give updates on the status and progress of your labor	43	10.1%
Providers deny the mother freedom of movement during labor	38	8.9%
Providers deny the mother the choice of position for birth	22	5.2%
Mother lack consent or permission before any procedure	26	6.1%
Non Confidentiality and privacy	151	35.5%
Providers didn't use drapes or covering to protect the mother's privacy	36	8.5%
Delivery couches/beds not separated by a screen	127	29.9%
Non-dignified care	16	3.8%
The provider didn't speak politely	16	3.8%
Discrimination	63	14.8%
Providers discriminate by race, ethnicity, and economic status	3	0.7%
Providers speak in a language and at a language-level, that mother can't understand	62	14.6%
Abandonment or denial of care	88	20.7%
Mother left alone or unattended during labor and delivery	69	16.2%
Mother lack encouragement of call if needed	21	4.9%
The provider didn't come quickly when the mother called him/her	11	2.6%
Detention in facilities	38	8.9%
The mother was detained in a health facility against her will	37	8.7%
The mother was detained at the facility because of a lack of payment of fees	1	0.2%

Independent predictors of D&A during labor and delivery

After controlling for the effects of potentially confounding variables using backward multivariate logistic regression, the study found out that, the risk of being disrespected and abused increases by 1.92 times as labor duration increases by one hour (AOR=1.92, 95% CI [1.58– 2.33]). Mothers who gave birth in the general hospital were 3.52 times more likely to face D&A than clients who deliver at health centers (AOR=3.52, 95% CI [1.34–9.25]). Clients with no formal education

were 3.97 times more likely to be disrespected and abused as compared with mothers with above secondary education (AOR =3.97, 95% CI [1.66– 9.51]). Mothers who were using only two ANC visits during the current pregnancy were 2.65 times more likely to face D&A than clients who had four times and more ANC visits (AOR =2.65, 95% CI [1.065 – 6.62]). Mothers who had a previous history of home delivery were 3.22 times more likely to be disrespected and abused when compared to their counterparts (AOR =3.22, 95% CI [1.36– 7.64]). Deliveries assisted by only one healthcare professional were 4.41 times more likely to face D&A as compared with deliveries attended by three to four professionals (AOR= 4.41, 95% CI [1.677– 11.589]). Similarly, laboring and delivering mothers with no birth companion during labor and delivery were 3.39 times more likely to be disrespected and abused as compared with mothers who had a birth companion in the delivery room (AOR [95% CI] 3.39 [1.245– 9.238]) (Table 2).

Table 2. Independent predictors of D&A, Assosa Zone, BG region, Ethiopia, October 2020.

Variable (n=425)		D&A status		COR 95% CI	AOR 95% CI	P-value
		No D&A (%)	D&A (%)			
Type of Health Facility	Health center	60 (30.5%)	137 (69.5%)	1	1	
	Primary hospital	5 (14.3%)	30 (85.7%)	1.312 [0.492 – 3.502]	1.312 [0.492– 3.502]	0.587
	General hospital	10 (5.2%)	183 (94.8%)	7.123 [3.544 – 14.315]*	3.517 [1.338– 9.245]*	0.011**
Educational Level	No formal education	15 (6.9%)	203 (93.1%)	5.524 [3.019 – 10.108]*	3.968 [1.655– 9.513]*	0.002**
	Only read and write	13 (11.3%)	102 (88.7%)	1.962 [1.033 – 3.723]*	0.102	
	Primary education	4 (10%)	36 (90%)	2.035 [0.702 – 5.901]	2.035 [0.702 – 5.901]	0.191
	Secondary education	12 (80%)	3 (20%)	0.045 [0.012 – 0.165]*	0.045 [0.012 – 0.165]*	0.000**
	Above secondary education	31 (83.8%)	6 (16.2%)	1	1	
Longer labor duration				1.764 [1.551 – 2.006] *	1.916 [1.577– 2.328] *	0.000**
Number of ANC	Once	7 (9.9%)	64 (90.1%)	2.174 [0.954 – 4.955]	2.174 [0.954 – 4.955]	0.065
	Twice	15 (7.7%)	179 (92.3%)	4.187 [2.290 – 7.655] *	2.655 [1.065 – 6.620] *	0.036**
	Three times	7 (11.3%)	55 (88.7%)	1.811 [0.790 – 4.152]	1.811 [0.790 – 4.152]	0.161
	Four times and above	33 (70.2%)	14 (29.8%)	1	1	
History of home delivery	Yes	16 (9.6%)	151 (90.4%)	2.798 [1.549 – 5.056] *	3.222 [1.358– 7.643] *	0.008**
	No	41 (25.2%)	122 (74.8%)	1	1	
Number of Professionals Attending the delivery	One professional	31 (9.1%)	308 (90.9%)	10.409 [5.937 – 18.247] *	4.409 [1.677–11.589] *	0.003**
	Two professionals	37 (50%)	37 (50%)	0.121 [0.069 – 0.214] *	0.121 [0.069 – 0.214] *	0.000**
	Three to four professionals	7 (63.6%)	4 (36.4%)	1	1	
Birth companion	Yes	33 (40.7%)	48 (59.3%)	1	1	
	No	42 (12.2%)	302 (87.8%)	4.943 [2.857 – 8.554] *	3.391 [1.245– 9.238] *	0.017**

*show strength of association

**significant at p-value <0.05

DISCUSSION

The study showed that more than one in five mothers who attended labor and delivery in the study area experienced at least one type of D&A. This finding is higher than previous studies [7, 8, 12, 25]. However, it is lower than other studies done in Ethiopia [11, 13, 14, 15]. The difference might be due to measurement tool differences, programmatic factors like providing training for health professionals, and the availability of guidelines and ethical standards in some of the facilities.

We found out that clients with no formal education were 3.97 times more likely to be disrespected and abused as compared with mothers with above secondary education. This finding is consistent with other studies [7, 11, & 13]. This might be because clients with no formal education are less likely to be aware of their rights and demand respectful care as compared with formally educated ones.

This study also found out that mothers who gave birth in a general hospital setting were 3.52 times more likely to be disrespected and abused than clients who deliver at health centers. This finding is in line with other studies in Ethiopia [14, 15]. This might be due to hospitals compromising the quality of service they provide due to client/patient overload, unlike health centers. This illustrates the necessity of providing sufficient and targeted support to hospitals to decrease service provider burnouts and raise motivation and a sense of accountability to provide quality and client-centered maternity care services.

We have also found out that longer labor duration was attributed to a high level of D&A. The risk of being disrespected and abused increases by 1.92 times as labor duration rises by an hour. This finding is consistent with the finding of a study done in the northern part of Ethiopia [12]. The possible explanation could be that the quality of care decreases due to providers' fatigue as the time of care gets prolonged.

The study also revealed that mothers who deliver having only two ANC visits were 2.65 times more likely to face D&A than clients who had four times and more ANC visits. This finding is in line with a study done in Ethiopia [15]. This might be due to the result of an acquaintance of the mother with the facility and the care providers, which is the result of previous ANC visits. Therefore, early initiation of ANC services should be encouraged.

Moreover, mothers with a history of home delivery were 3.22 times more likely to face D&A when compared with their counterparts. This might be due to the reason mothers compare the service they get at the health facility to the traditional care they receive during home delivery, which is more client-friendly and culturally sound. This is in line with a study done in Kenyan [26] that revealed women reported that they received more respect from traditional birth attendants and were treated better. So, it is vital to align services healthcare facilities provide to be attuned to the community's preferences and be culturally sound.

The study has also found out that, mothers with no birth companion were 3.39 times more likely to face D&A as compared with mothers who had a birth companion in the delivery room. This finding is consistent with multiple studies [8, 12, 14, 25, 27, & 28]. The reason behind this might be the presence of a close relative might bridge the communication gap between the care provider and the client and also, the presence of a third party might be seen as a "watchdog" by the caregiver to alert them to be more caring. Hence, facilities should encourage the presence of a family member in labor and delivery rooms to enhance the quality of service the client receives.

The study also found out that, the majority of respondents (61.4%) still think it is for the benefit of the mother that the care provider does "not-good" things. This implies, most of them have accepted and normalized the act of D&A and don't even know that their rights have been violated. This finding is consistent with other studies [16, 29, & 30]. This shows the strong need for working on enabling clients, especially mothers to their knowledge of sexual and reproductive health rights in healthcare facilities.

CONCLUSION

The overall prevalence of disrespect and abusive maternity care in the study area was high. Thus, healthcare facilities especially, hospitals should be given special attention in terms of staffing, training, and motivating care providers to advance the quality of care they provide.

Educating women on their sexual and reproductive rights and the importance of utilization of the recommended minimum of four ANC visits is vital. The presence of a birth companion in the delivery rooms should be encouraged by health facilities for better communication and smoother service provision. Moreover, health facility managers, health professionals, professional associations, and other development partners in the region should aim to make healthcare facilities more client-centered and provide the best service the community deserves for delivery and other maternal healthcare services.

LIMITATION OF THE STUDY

Interpretation of this study should be taken into consideration of the following limitations. There might be a potential of social desirability bias from the study participants since the study relied on self-report and interviews of the mothers were held at the same health facility where they gave birth.

DECLARATIONS:

Competing interests: The authors declare that they have no competing interests.

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THE PREVALENCE OF POST-TERM PREGNANCY AND ITS ASSOCIATED FACTORS AT ADAMA HOSPITAL MEDICAL COLLEGE, ADAMA, ETHIOPIA

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ABSTRACT

BACKGROUND: Pregnancy that extends to or beyond 42 completed weeks of gestation is defined as a post-term pregnancy. Post-term pregnancies are associated with an increased risk of fetal, neonatal, and maternal mortality and morbidity. This study aimed to assess the prevalence of post-term pregnancy and its associated factors.

METHODS: Institutional based cross-sectional study was conducted on 328 laboring women at Adama Hospital Medical College, Southeast Ethiopia. The study participants were selected by systematic random sampling technique. Data entry was made by Epi- info 7 and SPSS version 20 was used for analysis. Descriptive & analytical statistics were performed. Logistic regression analysis was used to identify factors associated with post-term pregnancy ($P < 0.05$).

RESULTS: The prevalence of post-term pregnancy was 13.7% (95%, CI: 10.1 – 18.2%). Previous history of post-term pregnancy (AOR = 7.94; 95% CI: 1.70 - 37.10), family history of post-term pregnancy (AOR = 5.51; 95% CI: 1.08 - 28.02), and having a male fetus (AOR = 2,62; 95% CI: 1.07 - 6.39) were significantly increased the risk of post-term pregnancy. Induction of labor (AOR = 7.35; 95% CI: 3.15 - 17.16), operative vaginal delivery (AOR = 7.06; 95% CI: 1.72 - 29.00), low 5th minute APGAR score (AOR = 4.24; 95% CI: 1.06 - 12.84), and Neonatal intensive care unit (NICU) admission rate (AOR = 3.59; 95% CI: 1.01 - 12.84) were significantly associated with post-term pregnancy.

CONCLUSIONS: The prevalence of post-term pregnancy was higher in the study area. The previous history of post-term pregnancy, family history of post-term pregnancy, having a male fetus, induction of labor, operative vaginal delivery, low 5^{th} minute APGAR score, and NICU admission rate were significantly associated with post-term pregnancy.

KEYWORDS: Adama, Ethiopia, Post-term pregnancy, Gestational age.

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INTRODUCTION

Post-term pregnancy is a pregnancy that has extended to or beyond 42 weeks of gestation (294 days). [1] The prevalence of post-term pregnancy varies worldwide but is estimated to be 5–10%. [2] The prevalence varies depending on population characteristics and local management practices. The percentage of primigravidas in the studied population, the prevalence of obesity, a prior post-term pregnancy, genetic predisposition, proportion of women with pregnancy complications, and the frequency of spontaneous preterm labor are some of the population characteristics that affect the prevalence of post-term pregnancy. [3, 4] Local management practices such as scheduled induction of labor (IOL), differences in the use of early U/S for pregnancy dating, an elective C/S rates will affect the overall prevalence of post-term pregnancy. [5]

The cause of truly existing post-term pregnancy is usually unknown. Common risk factors include primiparity, previous post-term pregnancy, maternal age > 30 years, male fetus, obesity, hormonal factors, and genetic predisposition. [6-11] Genetic factors were responsible for about 23-30% of post-term pregnancies and only maternal genes influenced pregnancy length. [7] A Danish study found that; the recurrence risk of post-term delivery was 19.9%. [9] Swedish study found that; the uncorrected OR for having a male baby at 42 weeks was 1.41. [12]

Post-term pregnancies are associated with increased fetal, neonatal, and maternal mortality and morbidity. [13] Fetal morbidities include; fetal distress, low 5th minute APGAR score, the passage of meconium, high NICU admission rate, MAS, macrosomia, neonatal acidaemia, and dysmaturity. [13] It is an independent risk factor for low 5-minute APGAR scores, fetal distress, and neonatal encephalopathy [6, 12, 14].

Studies were done in Texas to assess pregnancy outcomes at 40, 41, and 42 weeks of gestation found that; Labor complications increased from 40 to 42 weeks, including oxytocin induction, length of labor, the prolonged second stage of labor, forceps use, and cesarean delivery. Neonatal outcomes were similar in the three groups, including a 5-minute Apgar score of less than 4, admission to the NICU, umbilical artery pH less than 7, seizures, and perinatal mortality [15]. Studies were done in three AAU teaching hospitals found that there was a statistically significant association between post-term pregnancy and low 5th minute APGAR score and NICU admission rate [16].

There is limited information regarding the prevalence of post-term pregnancy and associated factors in our country, especially in the study area. So this study aimed to assess the prevalence of post-term pregnancy and its associated factors.

METHOD AND MATERIALS

The Design and Setting of the Study

Hospital-based cross-sectional study was conducted at Adama hospital medical college (AHMC), Department of Obstetrics and Gynecology, Obstetrics ward from February 1st to July 30th, 2019. AHMC is found in the oromia region, Adama town which is located about 100 km southeast of the capital city. The Hospital provides different specialty services to over 5 million people coming from the catchment area. The average number of delivery was 750 per month. Department of Obstetrics and Gynecology has a labor ward with 12 beds and 2 operation tables. The ward is staffed with 9 obstetricians and gynecologists, 51 midwives, 4 clinical nurses, 34 residents of different years of study, and a varying number of medical interns.

Characteristics of the study participants

All women who gave birth at AHMC were considered as the source population. All pregnant women whose gestational age was determined by the reliable first date of LNMP or early obstetrics ultrasound (less than 20 weeks), singleton pregnancies with cephalic presentations, and with no known fetal congenital anomalies were included in the study. Those with medical or obstetric complications and unknown gestational age were excluded from the study.

Sample Size and Sampling Procedure

The required sample size was determined by using

single population proportion formula considering the incidence of fetal distress among women with post-term pregnancy was 26.3% in the previous study done at Addis Abeba, Ethiopia [16]. The required statistical assumptions for determining the sample size were a 95% level of confidence, 5% margin of error, and 10% non-response rate. Accordingly, 328 women were sampled for the current study. A systematic random sampling technique was used to select the required number of clients.

Data collection tools and procedures

Data were collected using a combination of interviews and chart review by three BSc midwives who were trained for this purpose. Supervision was carried out by the investigators throughout data collection. Structured interviewer-administered data collection tools were adopted and modified from different literature. Questionnaires that guide chart review and the women interview were structured into socio-demographic characteristics and obstetric-related factors. The questionnaire and consent form were first prepared in English and then translated into the Afan Oromo and Amharic languages. The questionnaire was pretested and checked for clarity and a logical sequence on 5% of the sample before actual data collection began.

Data management and analysis

The collected data were coded and entered into Epi info version 7, then exported to SPSS version 20 for analysis. Data-processing tasks, such as data cleaning, categorizing, and transforming were then performed to make data ready for analysis. Descriptive analysis was performed to explore the characteristics of the study participants across their different socio-demographic and obstetric variables. Logistic regression analysis was used to identify factors associated with post-term pregnancy. The predictive model was developed using a standard model-building approach. In the process of building the model, first, a simple logistic regression analysis was performed to screen candidate variables that had a crude association with post-term pregnancy (P-value < 0.25). The selected candidate variables were then subjected to a multiple logistic regression model to estimate their adjusted association with post-term pregnancy. The statistical significance of independent variables in the final predictive model of post-term pregnancy was declared at alpha <0.05. Finally, the magnitude of association between the independent variables and post-term pregnancy was estimated using an odds ratio with a 95% confidence interval.

RESULTS

Socio-demographic characteristics

A total of three hundred twenty-eight women were enrolled in the study with a response rate of 100%. One hundred fifty-seven (47.9 %) of mothers were in the age group of 25 - 29 years and 183 (55.8%) of them were from urban areas. Only 47 (14.3%) of the women can't read and write. Of those respondents, 96.0% of the mothers were married and 57.9 % were housewife. (Table 1).

Table - 1: Sociodemographic characteristics of women who gave birth at term in Adama Hospital Medical College (n = 328)

Characteristics	Frequency	Percentage (%)
Age in years		
≤ 19	6	1.8
20 – 24	95	29.0
25 – 29	157	47.9
30 -34	52	15.9
≥ 35	18	5.5
Residency		
Urban	183	55.8
Rural	145	44.2
Educational Status		
Can't read and write	47	14.3
Primary school	141	43.0
Secondary school	90	27.4
College and University	50	15.2
Occupation		
Housewife	190	57.9
Merchant	55	16.8
Employed	72	22.0
Others	11	3.4
Marital Status		
Single	7	2.1
Married	315	96.0
Divorced	6	1.8
Total	328	100

Obstetrics related characteristics

More than half of, 172 (52.4%) mothers were multipara and all women involved in the study had antenatal care(ANC) follow up at least once. 15 (4.6%) of the study participants had a previous history of post-term pregnancy and thirteen (4.0%) of them had a family history of post-term pregnancy. Regarding the sex ratio of the newborns, 57 % of them were male. Twenty-eight (8.5%) of the neonate had a low 5th minute APGAR score (<7) and 53 (16.2%) of the newborn were referred to NICU (Table 2).

Table -2: Obstetric characteristics of women who gave birth at who gave birth at term in Adama Hospital Medical College (n = 328)

Obstetric Characteristics	Frequency	Percentage (%)
Parity		
Primipara	145	44.2
Multipara	172	52.4
Grand multipara	11	3.4
Number of ANC		
< 4	96	29.3
≥ 4	232	70.7
Previous History of Post-term pregnancy		
Yes	15	4.6
No	313	95.4
Women born Post-term		
Yes	13	4.0
No	315	96.0
Family History of Post-term Pregnancy		
Yes	13	4.0
No	315	96.0
Onset of labor		
Spontaneous	248	75.6
Induced	80	24.4
Status of Liquor		
MSAF	72	22.0
Clear	256	78.0
NRFHRP		
Yes	48	14.6
No	280	85.4
Mode of Delivery		
SVD	246	75.0
C/D	53	16.2
Instrumental Delivery	29	8.8
Neonatal Outcome		
Alive	323	98.5
Still born	5	1.5
Sex of the Neonate		
Male	187	57.0
Female	141	43.0
5th Minute APGAR less than 7		
Yes	28	8.5
No	300	91.5
Neonatal admission to NICU		
Yes	53	16.2
No	275	83.8
Need for Neonatal Resuscitation		
Yes	49	14.9
No	279	85.1

Prevalence of Post-Term pregnancy

The prevalence of post-term pregnancy was 13.7% (95% CI: 10.1 – 18.2%). Out of 45 neonates delivered post-term, 10 (22.2%) had features of post maturity.

Factors associated with Post-term Pregnancy

A simple logistic regression analysis was used to identify candidate variables for a multiple logistic regression model. At this level: maternal age, previous history of post-term pregnancy, a woman born post-term, family history of post-term pregnancy, Onset of labor, status of liquor, NRFHP, instrumental delivery, cesarean section, sex of the newborn, 5th minute APGAR score, neonatal admission to NICU, and the need for neonatal resuscitation was selected as a candidate variable at P-value < 0.25.

The study found that; women who had a previous history of post-term pregnancy had 7.94 times higher odds of having subsequent post-term pregnancy (AOR = 7.94; 95% CI: 1.70, 37.10). Women whose family members had post-term pregnancies were 5.51 fold increase risk of having post-term pregnancy compared to women who had no family history (AOR = 5.51; 95% CI: 1.08, 28.02). In this study the sex of the newborn was significantly associated with the risk of post-term pregnancy, women having a male fetus had a 2.62 times higher risk of post-term pregnancy compared to those having a female fetus (AOR = 2,62; 95% CI: 1.07, 6.39).

Regarding maternal and fetal risks associated with post-term pregnancy, the study found that; women with post-term pregnancy had a 7.35 fold increased risk of induction of labor (AOR = 7.35; 95% CI: 3.15, 17.16). Post-term pregnancy is also associated with 7.06 times increased risk of operative vaginal delivery relative to term pregnancy (AOR = 7.06; 95% CI: 1.72, 29.00). Neonates born at post-term had a 4.24 fold increased risk of having a low 5th minute APGAR score compared with those born at term (AOR = 4.24; 95% CI: 1.06, 12.84). NICU admission rate was increased 3.59 fold in post-term neonates relative to term neonates (AOR = 3.59; 95% CI: 1.01, 12.84) (Table-3).

Table 3: Bivariate and multivariable association of Post-term Pregnancy and independent factors among women who gave birth at Adama Hospital medical college (n = 328)

Variable	Post-Term Pregnancy		COR (95% CI)	AOR (95% CI)
	Yes: Frequency (%)	No: Frequency (%)		
Maternal age in years				
≤ 19	2 (4.4%)	4 (1.4%)	Ref.	Ref.
20-24	11 (24.4%)	84 (29.7%)	3.82 [0.63,23.33]*	3.56 [0.28,
25-29	19 (42.2%)	138 (48.8%)	3.63 [0.62,21.19]*	44.47]
30-34	9 (20.0%)	43 (15.2%)	2.39 [0.38, 15.09]	5.49 [0.44,
≥ 35	4 (8.9%)	14 (4.9%)	1.75 [0.23, 13.31]	68.20]
				5.17 [0.36, 73.45]
				4.78 [0.28, 82.43]
Marital status				
Single	1 (2.2%)	6 (2.1%)	Ref.	
Married	42 (93.3%)	273 (96.5%)	1.08 [0.13, 9.22]	
Divorced	2 (4.4%)	4 (1.4%)	0.33 [0.02, 5.03]	
Residence				
Urban	2 (48.9%)	161 (56.9%)	1.38 [0.74, 2.59]	
Rural	23 (51.1%)	122 (43.1%)	Ref.	
Education Status				
Can't read and write	4 (8.9%)	43 (15.2%)	Ref.	
Primary	21 (46.7%)	120 (42.4%)	0.53 [0.17, 1.64]	
Secondary	12 (26.7%)	78 (27.6%)	0.61 [0.18,1.99]	
College and University	8 (17.8%)	42 (14.8%)	0.49 [0.14,1.75]	
Occupation Status				
House wife	24 (53.3%)	166 (58.7%)	Ref.	
Merchant	10 (22.2%)	45 (15.9%)	0.65 [0.29, 1.46]	
Employed	9 (20.0%)	63 (22.3%)	1.01[0.45, 2.30]	
Others	2 (4.5%)	9 (3.2%)	0.65 [0.13, 3.19]	
Parity				
Primipara	28 (62.2%)	117 (41.3%)	0.93 [0.19, 4.54]	
Multipara	15 (33.3%)	157 (55.5%)	2.33 [0.46, 11.78]	
Grand-multipara	2 (4.4%)	9 (3.2%)	Ref.	
Number of ANC follow up				
< 4	16 (35.6%)	80 (28.3%)	0.71 [0.39, 1.39]	
≥ 4	29 (64.4%)	203 (71.7%)	Ref.	
Previous Hx of Post-term pregnancy				
Yes	9 (20.0%)	6 (2.1%)	11.54 [3.88,	7.94 [1.70,
No	36 (80.0%)	277 (97.9%)	34.32]*Ref.	37.10]**Ref.
Women born Post-term				
Yes	5 (11.1%)	8 (2.8%)	4.30 [1.34, 13.78]*	3.53[0.63,
No	40 (88.9%)	275 (97.2%)	Ref.	19.90]Ref.
Family Hx of Post-term Pregnancy				
Yes	6 (13.3%)	7 (2.5%)	6.07 [1.94, 18.98]*	5.51 [1.08,
No	39 (86.7%)	276 (97.5%)	Ref.	28.02]**Ref.

Onset of Labor				
Induced	28 (62.2%)	52 (18.4%)	7.32 [3.73, 14.35]*	7.35 [3.15,
Spontaneous	17 (37.8%)	231 (81.6%)	Ref.	17.16]**Ref.
Status of Liquor				
MSAF	18 (40.0%)	54 (19.1%)	2.83 [1.45, 5.50]*	1.12 [0.43, 2.93]
Clear	27 (60.0%)	229 (80.9%)	Ref.	Ref.
NRFHRP				
Yes	13 (28.9%)	35 (12.4%)	2.89 [1.38, 6.00]*	0.66 [0.20, 2.19]
No	32 (71.1%)	248 (87.6%)	Ref.	Ref.
Cesarean Delivery				
Yes	16 (35.6%)	37 (13.1%)	3.67 [1.82, 7.40]*	3.04 [0.98, 9.39]
No	29 (64.4%)	246 (86.9%)	Ref	Ref.
Instrumental Delivery				
Yes	9 (20.0%)	20 (7.1%)	3.29 [1.39, 7.77]*	7.06 [1.72,
No	36 (80.0 %)	263 (92.9%)	Ref.	29.00]**Ref.
Neonatal Outcome				
Alive	44 (97.8%)	279 (98.6%)	Ref.	
Still born	1 (2.2%)	4 (1.4%)	0.63 [0.07, 5.78]	
Sex of the neonate				
Male	35 (77.8%)	152 (53.7%)	3.02 [1.44, 6.33]*	2.62 [1.07,
Female	10 (22.2%)	131 (46.3%)	Ref.	6.39]**Ref.
5th Minute APGAR score less than 7				
Yes	15 (33.3%)	13 (4.6%)	10.39 [4.52,	4.24 [1.06,
No	30 (66.7%)	270 (95.4%)	23.89]*Ref.	16.93]**Ref.
Neonate Referred to NICU				
Yes	15 (33.3%)	15 (5.3%)	8.93 [3.98, 20.06]*	3.59 [1.01
No	30 (66.7%)	268 (94.7%)	Ref.	12.84]** Ref.
Need for Neonatal Resuscitation				
Yes	15 (33.3%)	38 (13.4%)	3.22 [1.59, 6.54]*	0.65 [0.20, 2.13]
No	30 (66.7%)	245 (86.6%)	Ref.	Ref.

Notes: *P < 0.25 ; **P < 0.05.

DISCUSSION

The prevalence of post-term pregnancy was 13.7% (95% CI: 10.1 – 18.2%).This finding was higher than the worldwide prevalence of post-term pregnancy which was 5-10% [2]. However, the figure is in the range of the incidence of post-term pregnancy reported in some kinds of literature which is 3 – 14% [17]. The higher prevalence of post-term pregnancy in our study can be explained by the absence of scheduled induction of labor and absence of routine use of ultrasound for the pregnancy dating. Scheduled induction of labor and the introduction of routine ultrasound for gestational age dating significantly reduce the incidence of post-term pregnancy (3-5). It was also higher than the findings of the study done in Tigray and Addis Abeba, Ethiopia; the reported prevalence was 6 % and 8.8% respectively [16, 18]. The variation can be explained by the difference in methodology and timing of the study.

In this study, the previous history of post-term pregnancy and family history of post-term pregnancy has significantly increased the risk of subsequent post-term pregnancy. Women who had a previous history of post-term pregnancy had a 7.9 fold increased risk of subsequent post-term pregnancy. The finding of this study was consistent with the previous studies done in Sweden, Denmark, and America [8, 9, 19]. This association is explained by the possible genetic component of post-term pregnancy as has been mentioned by several studies. Those women having a family history of post-term pregnancy had a 5.5 fold increased risk of post-term pregnancy. The familial association of post-term pregnancy was reported in, a Norwegian study, both paternal and maternal gestational age at birth were found to be related to the gestational age of their offspring [20]. Women having a male fetus had a 2.6 fold increased risk of post-term pregnancy compared to a woman having a female fetus. A similar association was found by the previous studies done in Sweden they found that the ratio of male to female for post-term pregnancy was 3 to 2 [11].

Women with post-term pregnancy had a 7.3 fold increased risk of induction of labor. The finding of this study was comparable with the previous studies done in Dallas Texas and three Addis Abeba University (AAU) teaching hospitals [15, 21]. Our national guidelines recommend termination of pregnancy at 42 completed weeks of gestation to avoid the risk of still birth possibly by induction of labor, so it was the reason to have high induction of labor at this gestational age.

Post-term pregnancy is also associated with 7 fold increased risk of operative vaginal delivery relative to term pregnancy. A similar finding was reported in the previous studies [22, 23]. This is due to a high rate of NRFH pattern requiring operative vaginal delivery in post-term pregnancy as a result of associated uteroplacental insufficiency and oligohydramnios.

Regarding neonatal morbidities, the study found that; Neonates born post-term had a 4.2 fold increased risk of having a low 5th minute Apgar score and 3.6 fold increased risk of NICU admission rate. The finding of the study was comparable to the study done in Texas and Ethiopia [15, 16] but different from the studies done in Liverpool and Addis Abeba, Ethiopia found no association between post-term pregnancy and low 5th minute Apgar score [17, 21]. The possible explanations for the low 5th minute Apgar score among post-term neonates were due to a high rate of MAS, infection, and birth asphyxia.

CONCLUSION AND RECOMMENDATION

The prevalence of post-term pregnancy in this study was among the highest reported prevalence. There was a significantly increased risk of post-term pregnancy among women with a previous history of post-term pregnancy, family history of post-term pregnancy, and having a male fetus. Regarding the maternal and fetal complications, the study found that, a statistically significant association between post-term pregnancy and induction of labor, operative vaginal delivery, low 5th minute APGAR score, and NICU admission rate. The high prevalence of post-term pregnancy in the study

area calls for the use of some intervention for the reduction of post-term pregnancy such as routine use of ultrasound for pregnancy dating. To improve maternal and perinatal outcome routine elective induction of labor before reaching post-term should be considered for those women having a risk factor for post-term pregnancy. We also recommend a large-scale study in the study area to assess the maternal and perinatal morbidities and mortalities associated with post-term pregnancy.

Abbreviations

ACOG- American College of Obstetrician and Gynecologists; AHMC- Adama Hospital Medical College; ANC-Antenatal Care; AOR-Adjusted Odds Ratio; APGAR- Appearance, Pulse rate, Grimace, Activity, and Respiration; DM- Diabetes Mellitus; EDD- Estimated Date of Delivery; GA-Gestational Age; IOL- Induction of Labor; LNMP-Last Normal Menstrual Period; MAS- Meconium Aspiration Syndrome; NICU- Neonatal Intensive Care Unit; NRFHP- -Non-Reassuring Fetal Heart Rate Pattern; RR- Relative Risk; U/S- Ultrasound.

DECLARATIONS

Ethics Approval and Informed Consent

Ethical clearance was obtained from the Institutional Ethics Review Board of AHMC. The informed consent form was approved by the Ethics Review Board of AHMC. Informed consent was obtained verbally from each study participant before data were collected. The data's confidentiality was assured by using code as identification; the mothers' names were not recorded.

Consent for Publication

Not applicable.

Authors Contribution

All authors contributed to data analysis and drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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CERVICAL ECTOPIC PREGNANCY AFTER IVF: A CASE REPORT OF SUCCESSFUL CONSERVATIVE MANAGEMENT WITH TRANSVAGINAL AMNIOTIC SAC ASPIRATION AND INTRA SACCULAR METHOTREXATE INJECTION

Feruz Surur, MD[1], Mutesim Abdulahi MD[2],

ABSTRACT

Cervical Ectopic Pregnancy (CEP) is a very rare condition accounting for less than 1 % of all Ectopic Pregnancies. Early diagnosis and management of the case is very essential in order to avoid serious and life threatening complications which are difficult to successfully manage in resource poor settings. Here we are presenting a case report of a 38 yr. old Ethiopian mother who developed CEP following her 1st IVF therapy for a secondary infertility secondary to Asherman's syndrome. She was successfully managed conservatively, with aspiration and subsequent instillation of methotrexate in to the gestational sac. Early diagnosing with transvaginal ultrasound and serial B HCG measurement coupled with immediate therapeutic measures are the key issues in preventing the severe life threatening complications of CEP and conserve the subsequent fertility potential of such patients.

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INTRODUCTION

Cervical Ectopic pregnancy (CEP) is a rare life-threatening condition and represents less than one percent of all ectopic pregnancies. The etiology of CEP is not fully understood but reported risk factors for CEP include history of pelvic inflammatory disease, smoking, previous pelvic surgery, previous ectopic pregnancy, intrauterine device use, anatomic anomalies, previous cesarean delivery, previous uterine or cervical surgery, in vitro fertilization, and diethylstilbestrol exposure [1, 2, 3].

Five clinical signs of cervical ectopic pregnancy were identified in an article by Paalman: uterine bleeding without cramping pain after a period of amenorrhea, softened and disproportionately enlarged cervix equal to or larger than the corporal portion of the uterus (an hourglass-shaped uterus), products of conception entirely confined within, and firmly attached to, the endo cervix, a snug internal os, and, a partially opened external os [4].

The most feared complication in CEP is the life-threatening vaginal bleeding associated with the high risk of emergency hysterectomy and massive blood transfusions. In the past, hysterectomy was often the only choice available due to extensive and uncontrollable hemorrhage [5].

Advances in ultrasonography technology and the availability of quantitative beta-human chorionic gonadotropin (β-hCG) have made diagnosis of CEP possible at an early gestational age when the woman is still asymptomatic. Early diagnosis of CEP which is essential to allow for careful planning of more conservative procedures in those patients who desire future childbearing [6]. Diagnosis of CEP could be made on sonography if the following criteria are fulfilled: 1) an empty uterus, 2) a barrel-shaped cervix, 3) a gestational sac present below the level of uterine arteries, 4) absence of the sliding sign (when pressure is applied to the cervix using the probe, the gestational sac slides against the endo cervical canal in a miscarriage, but does not in an implanted cervical pregnancy) and 5) blood flow around the gestational sac on color Doppler [7].

The differential diagnosis of CEP is a prior intrauterine gestational sac in the process of being expelled from the uterine cavity. The main difference between these clinical situations is that in CEP the internal os of the cervical canal is closed, whereas in cervical abortion it is dilated.

So far, there is no an established single "gold standard" treatment of choice; in the management of more advanced CEP. Conservative approaches are increasingly preferred by many.

Here, the authors describe a case of a hemodynamically stable nulliparous woman diagnosed to have a 7weeks CEP and managed successfully with aspiration of amniotic sac and intra saccular installation of MTX. The diagnostic approach along with therapeutic options available for the management of CEP in hemodynamically stable patients are discussed.

CASE REPORT

Our patient is a 38yrs old G2P0A1 mother who presented with a chief c/o mild intermittent crampy abdominal pain of 2 days duration. Four weeks prior to her presentation she had had an IVF procedure with a single fresh transfer of a day 3 embryo. She gave history of in ability to conceive of 6yrs duration following her first pregnancy which ended up in 1st trimester spontaneous abortion, which was treated with MVA. Subsequently, she reported that her menus has been drastically reduced. After a diagnosis of Uterine Synechiae, A hysteroscopic excision of an intrauterine adhesive septum and scar was made. IUCD was left in situ for 2 months. She was then enrolled in to IVF scheme. The current pregnancy was achieved after an uneventful ovarian stimulation with a mild protocol and a fresh, single, day three embryo transfer. An assay of serum beta hcg was used to confirm the pregnancy on 14th day of embryo transfer and the titer was 355 IU that doubled to 698 IU after the subsequent 48hrs. Corpus luteal support continued and She was then scheduled for ultrasound evaluation after 2 weeks.

She came 15 days after the positive test for her scheduled ultrasound, but also complains of mild

lower abdominal and lower back discomfort. Otherwise, she was not showing any sign of pain or distress.

Her vital signs were normal. There were no any abnormal findings on general physical examination. Trans virginal ultrasonography showed empty endometrial cavity and a gestational sac of 2 x3 cm in the posterior wall of the cervix below the internal os and with a yolk sac and fetal pole but no visible FH activity (Fig 1). Sliding sign was negative. There was adequate blood flow around the sac.

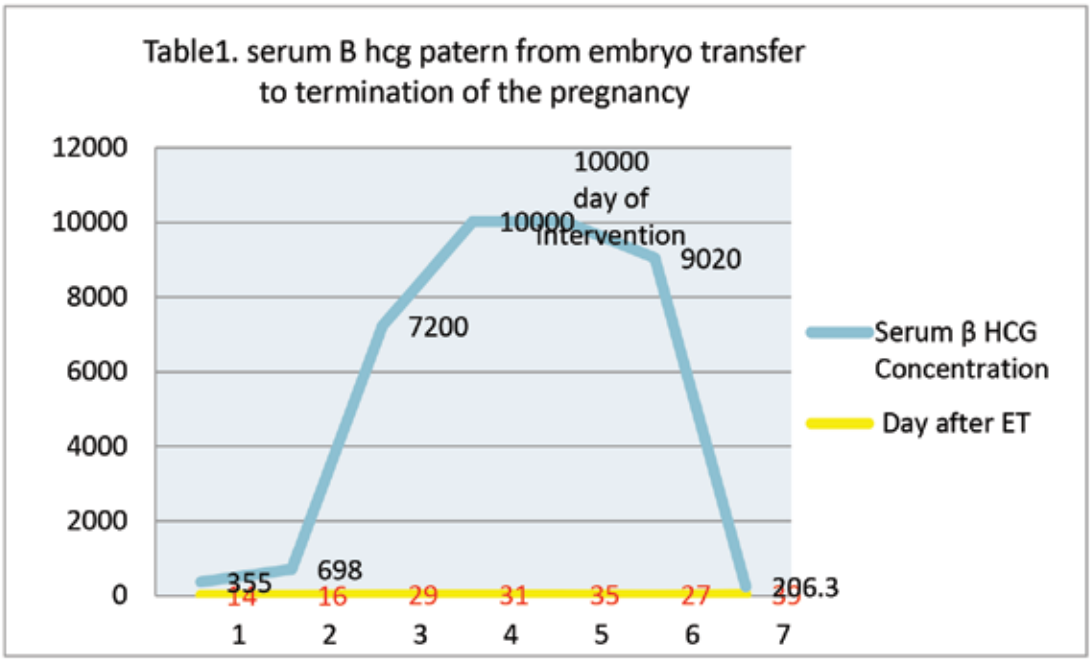
Figure 1. A transvaginal image a cervical pregnancy. Note a gestational sac on the posterior wall of the cervix below the level of the internal os.

Speculum examination revealed a healthy, but slightly enlarged cervix. Bimanual examination was avoided for fear of rupture.

Lab investigations were all normal: hemoglobin was 12.6gm, blood group B positive. Serum B HCG on this day was 7200 IU.

With these findings, a diagnosis of CEP was made, patient was counseled about the potential dangers and prognosis and admitted to the ward. The next day, TVS was repeated and a similar finding was observed. Following a written consent, she was taken to the operation theatre where under general but light anesthesia and using a transvaginal ultrasound guidance the gestational sac first was aspirated and a 50mg of methotrexate was instilled through the same needle in situ. (Figure 2, TVS, immediately after aspiration). Since both intra and post-operative course of the patient were stable she was discharged after a 12 hrs. of stay with an advice on the need for close follow up, with clinical, ultrasound and Beta HCG monitoring.

Beta HCG 48 hours later was 9020 iu. TVS, revealed swollen cervix with no sac or fetal pole. Subsequently Beta HCG continued to drop when it came to less than 5, 3 weeks after the procedure. (Figure 2) shows the drop in beta HCG.



The cervical swelling also continued to subside. (Figure 3). She experienced dark menstruation like bleeding on the third week after the intervention which subsided by itself.

Figure 3, picture of TVS, 10 days after intervention showing shrinking cervical swelling

DISCUSSION

To our best knowledge and literature reviews, this is the first reported case of CEP in Ethiopia. Most of reported cases of CEP elsewhere dwell on the potential complication and surgical management of CEP, including hysterectomy. With the advancement of TVS and introduction of medical management of ectopic pregnancy in general, early detection and conservative management are being increasingly reported globally [8]. Conservative therapy is important in CEP patients, for it is less invasive, less risky and better particularly for those who desire fertility preservation. A review of the literature shows, although mainly consisting of case reports, that the present treatment standard in asymptomatic CEP is MTX combined with intra-amniotic feticide in the case of a viable pregnancy [9]. Controversy remains about the criteria for a safe and successful medical or, on the other hand, surgical treatment. Many attempts are described to determine special risk factors predictive of the success rate of an either conservative or surgical procedure. The clinical conditions for the conservative medical approach were outlined by Ushakov et al. [10].

For conservation of the uterus various therapeutic options are described including medical management with cytotoxic agents such as systemic MTX injection, either as a single dose or serial injections with leucovorin rescue, misoprostol, mifepristone, and interventional measures, for example the US-guided injection of MTX, potassium chloride (KCl) or vasopressin directly in the gestational sac intracervical carboprost injection and needle aspiration of the products, use of a Foley catheter to tamponade the endo cervix after dilatation and curettage and cervical cerclage [11-16]. Other conservative options include the use of laparoscopic surgical ligation of blood vessels, hysteroscopic excision, and angiographic uterine artery embolization, stepwise de vascularization of the uterus, internal iliac artery ligation, angiographic UAE, intracervical carboprost injection and needle aspiration of the products [9–14] with a high degree of success and minimal morbidity [3, 8, 14].

Our patient who presented with multiple risk factors for developing CEP that includes history of previous abortion, Asherman's syndrome, hysteroscopic excision of an intrauterine adhesion and use of an IUCD was successfully managed with transvaginal amniotic aspiration and intra saccular methotrexate injection thus underscoring the importance of early diagnosis and treatment of CEP before a dire life threatening obstetric events transpire. Early diagnosis and treatment are important to decrease associated morbidity and requirement for further interventions that may not even be available and affordable in our usual poor setups. [17/18].

The use of MTX has become one of the most widely used options in the management of cervical ectopic pregnancies [12,13] and in our setup this is a relatively possible and easily affordable option. Combining, transvaginal amniotic aspiration as is done in selective feticide and intra saccular administration of methotrexate is considered because it is expected to reduce the total requirement of systemic methotrexate thus conserve already dwindling ovarian reserve in our patient.

Our management of this case supports its use in the conservative treatment of cervical ectopic pregnancies. Patients should be hospitalized due to the possibility of potentially serious complications.

If, after initial methotrexate administration, there is an inadequate decrease of hCG levels, a repeat dose of MTX administration or UAE with or without immediate curettage might be performed to boost the effects of MTX [8, 15,19]. Our patient, showed progressive decline in BHCG and reduction in the size of cervical swelling.

In patients with heterotopic pregnancies direct or ultrasound guided KCl injections might be the conservative modality of choice [7]. Intra cardiac KCl injection might make methotrexate treatment more effective in cases where fetal cardiac activity is present (8). Intensive post-treatment surveillance and monitoring serum hCG levels weekly appears essential in decreasing morbidity.

Overall, the need for primary surgical treatment in CEP increases with advancing gestational age [17]. In this clinical situation significant and life-threatening vaginal hemorrhage remains the major concern. Some points must be kept in mind whenever a safe clinical management option of advanced CEP is to be implemented: in asymptomatic patients presenting with CEP primary conservative medical management using MTX or KCl is always a possible treatment option. At any time when treating a patient with CEP, a considerable amount of packed red blood cells must be held in reserve. Furthermore, local or systemic measures ensuring hemostasis such as cervical tamponade or blockade using a Foley catheter, percutaneous embolization of pelvic vessels in good setups, or surgical ligation of cervical branches of uterine arteries must be available immediately. Also to be ensured is that urgent laparotomy must be possible at any time.

Conservative treatment of cervical pregnancy might be successful with careful follow up and subsequent conservative interventions. Since there is no a clear cut consensus in the literature as to which modality of treatment to start with (medical vs surgical), so far, the promising conservative treatment modalities need to be further evaluated through randomized controlled trials, to accomplish a standard stepwise treatment approach for this high-risk emergency.

In summary, there are no guidelines available for clinicians. Therefore, each case of CEP must be managed individually taking the presented management modalities carefully into account

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